The Builder.

VOL. LXII. No. 2270. SATURDAY, MAY 7, 1892.

ILLUSTRATIONS.

Cathedrals of England and Wales: XVII., Llandaff (West Front)—Drawn by Mr. C. E. Mallows ..... *Double-Page Photo-Litho.*
Plan of Llandaff Cathedral.—Measured and Drawn by Mr. John H. James ..... *Double-Page Photo-Litho.*
Cartoons for a Window.—Designed for Euston Church, Suffolk, by Mr. H. Ellis Wooldridge ..... *Double-Page Ink-Photo.*
Monument in St. Neot's Church, Huntingdonshire.—Mr. Frederick A. Walters, Architect ..... *Double-Page Ink-Photo.*

Blocks in Text.

Llandaff Cathedral: Supposed Chancel Arch of Bishop Urban's Church ....Page 358
First Bay of Nave, Llandaff Cathedral 358
Chapter House, Llandaff Cathedral 359
West Door, Llandaff Cathedral ..... Page 360
The Ancient Choir Screen, Canterbury Cathedral 362
Diagrams in Students' Column: Heating by Hot Water 363, 364

CONTENTS.

The Royal Academy Exhibition 349
Tests of Building-Stones 351
Notes 352
Architecture at the Royal Academy.—II. 353
Letter from Paris 354
The Surveyors' Institution: Result of Fellowship Examination 355
Incorporated Association of Municipal and County Engineers 355
The Architectural Association Spring Visits 356
Architectural Societies 356
The London County Council 357
The Institute of Builders: Annual Dinner 357
Competitions 357
Llandaff Cathedral 358
Cartoons for Stained-Glass Windows, Euston Church 360
Monument to the late Mrs. Rowley, St. Neots 360
The Steeple of St. Antholin's 361
Architectural Education 361
Sir Gilbert Scott's Restorations 361
The Grissell Medal Competition 362
Safety of Ladders 362
Christ's Hospital 363
Student's Column.—Warming Buildings by Hot Water, XIX. 363
Obituary 364
General Building News 364
Sanitary and Engineering News 364
Foreign and Colonial 365
Miscellaneous 365
Capital and Labour 365
Meetings 365
Recent Patents 366
Some Recent Sales of Property 366
Tenders 367

The Royal Academy Exhibition.

CAREFUL examination of the array of pictures at Burlington House justifies the conclusion that this year's is an exhibition of more than usual interest. No doubt a good many rampant specimens of commonplace are deposited on the line by Academicians who have outlived their reputation; but these sins are counterbalanced by the presence of a good many very clever and interesting works by men who are not Academicians, as well as by some eminent R.A.'s who are quite at their best in the present exhibition.

The picture of the year is unquestionably Mr. Orchardson's "St. Helena, 1816; Napoleon dictating to Count Las Cases the history of his campaigns" (173). Mr. Orchardson is one of the few English painters of the day whose works, admirable and conscientious as they are in execution, have an intellectual interest quite beyond that which arises from mere skill in technique. The figure of Napoleon in the cocked hat and grey overcoat has been painted hundreds of times, well, badly, and indifferently: Mr. Orchardson has endeavoured to show the man without his war-paint. According to a frequent practice with this painter, there are but two figures on this rather large canvas, each of which is the complement or balance to the other. Napoleon, in the ordinary dress of the period, stands in the middle of the floor, his arms behind him, his face fixed on the large map which lies for the moment above the others on the floor, kept down at one end by a book, and at the other by a sheathed sword. His countenance expresses intent recollection and concentration, as he endeavours to recall on the map the memory of one of his marches over the country it represents; and the look of power on his face is curiously blended with a certain vulgarity; giving the character of a man whom you might fear but not respect. This is no mere conventional "historical painting;" the figure is a brilliant realisation which will live in the memory of all who are capable of appreciating its power. Las Cases sits at his desk in a corner of the room, waiting with upturned face for the next communication from his chief. The accessories, not numerous or elaborate, are most carefully painted, and it hardly seems possible to find a fault in this truly memorable work.

The President, in his own very different manner, is at his best, too, in "The Garden of the Hesperides" (204). The composition of the picture, of course, is essentially decorative. The three maidens, draped respectively in red, saffron, and green, are reclined with their heads nearly meeting against the magic tree; the serpent (not a conventional dragon) coils in friendly fashion round one of them and turns its head to her caress; the head, by the way, is somewhat mixed with the dark purple sea in the distance, and does not quite stand out from it. The colour harmony of the draperies is perfect and the attitude of the figures graceful; only is there something harsh and crude in the tones of the foreground foliage. Besides this, Sir F. Leighton exhibits "The Sea Gave up the Dead Which Were in it" (115), a repetition of his study for a decorative painting for St. Paul's, and which seems to us a gruesome and unhappy conception: "At the Fountain" (156), a half-length draped figure rather hard and mechanical in design and treatment; a "Bacchante" (257), leaping along in a leopard-skin dress (a much finer piece of colour, but surely the left hand, stretched as it is towards the spectator, should be larger than it is drawn,—the perspective of the arm seems the wrong way about); and "Clytie" (489), a small landscape in which the heroine, on an altar in the foreground, passionately worships the god of day setting over a mountain, and illuminating the rolling clouds with a brassy splendour which effectually kills Mr. Furse's portrait of the Bishop of Oxford hung above it.

In their usual neighbourhood in the Third Gallery appear the chief works of Mr. Tadema and Mr. Poynter, the rival classicists. In Mr. Tadema's picture, "A Kiss" (258) is a very innocent one offered to the sweetest of little children by one of a group of Greek ladies at the top of a marble stair which leads to a bathing resort, as we see by the one or two figures swimming in the water and undressed on the beach below. A great marble balustrade, and an inscription in bronze relief on the side of the stair wall, most carefully drawn in very sharp perspective, are characteristic of the painter's preferences. Mr. Poynter's "When the World was Young" (265) hardly answers to its title; it has been absurdly called in some of the papers a Greek interior; it is Roman in every detail, in the design of the mosaic floor, in the painted decoration under the window, in the marble columns carved with foliage in relief; and the Roman world was anything but "young" in the days of these decorative details. Two very pretty maidens are seated on the floor playing with knuckle-bones; a third sits half dozing in the window; figures and decorations are alike solidly and learnedly painted, with uncompromising care; the picture is one of the best its artist has produced.

Mr. Watts's large picture (164) is a bewildering mistake, and the title, "She Shall be Called Woman," suggests at once an absolute refusal to concur. This colossal bronzed figure, half seen through circling vapours, and with head upturned so that only the chin is visible, is apparently intended as a kind of typical representative of ideal woman; as far as it can be seen at all, a rather terrible ideal. This is the snare into which this remarkable painter not infrequently falls, of thinking more of expressing a meaning than making a picture. Mr. A. Moore in his one picture "Lightning and Light" (672), represents, perhaps, the opposite error of thinking only of pictorial effect and being content with no meaning; but as painting, after all, is painting, this mistake is the least mischievous of the two. Sir John Millais' much-talked-of work is a winter landscape, "Blow, blow, thou Winter Wind" (211), a hillside with the beginning of a snowstorm. It is a disappointing work with very fine passages in it, especially the wild look of the distant part of the landscape half seen through whirling snow, but the foreground is more realistic than powerful, and the tree very hard and metallic-looking. His other landscape, "Halcyon Weather" (142), a quiet pool in a wood, with a wooded distance beyond, is admirable in detail, but does not give us the summer-like impression as a whole. His best work is the pretty

little child portrait named from the flower she holds, "The Little Speedwell's Darling Blue" (256), which contrasts happily with the seated child's white frock and fair complexion. There is obvious reference to Reynolds in the attitude and placing of the child. The tree and landscape are most happily touched in, just indicated and left in subordination. A little more of that subordination in the landscape previously mentioned would probably have made all the difference in its effect.

It is to be hoped that Mr. Stanhope Forbes will not believe the critics who tell him that "Forging the Anchor" (287) is his best work. It is his largest, and it is a fine pictorial subject powerfully treated, but it (necessarily) exhibits nothing like the varied discrimination of character which charmed us in "The Health of the Bride" and "By Order of the Court." Mr. Brangwyn's "Convict Ship" (307) is hung too high to be well seen, but it does not appear to be among his successes, and is not either agreeable in colour or very pointed or intelligible in motive. Nor can we congratulate Mr. Crofts much on his two pictures in the same room, "The Gunpowder Plot: the Conspirators' last Stand at Holbeach" (311) and "Charles I. at Edge Hill" (331). Perhaps the subjects are deficient in interest in comparison with some others which he has treated; at any rate, considering that they are Mr. Crofts' work, they are disappointing. Battle pictures are not at their best this year; Mr. Laslett J. Potts has a splendid subject in the "First Sight of Moscow" (609), but it is only a very average Napoleonic picture, and one cannot afford an average one now. The military picture of the year is Lady Butler's "Halt on a Forced March: Peninsular War" (27), a curious example of the power which real knowledge of and sympathy with the subject will lend to a picture hard in execution and deficient in pictorial effect. It is *real*, and therein lies its strength. The prominent object is a gun-carriage and horses, with wounded men propped on the carriage under various conditions of suffering. One of the leading horses has just dropped dead or exhausted.

Mr. Waterhouse's "Circe Poisoning the Sea" (20) is weird enough; a long lank figure (apparently too long) in clinging drapery, standing on tiptoe on the water and dropping the poison in a thin stream from the lip of a shallow glass vessel. The uncanny look of the face reminds one of Mr. Burne Jones's "Mermaid." Mr. Waterhouse's other contribution is "Danaë" (924) helped out of her box on the shore by men who are as old-world as the crew of the Ulysses ship last year, but "Danaë" looks too modern to group with them. Much is made of the antique brass-bound box, and not much of the sea. Mr. F. D. Millet has abandoned his Georgian ladies and interiors for Puritan figures, in "Between Two Fires" (12), and paints figures and details as well as ever, but there is not the same completeness about it as we are accustomed to in his favourite class of subjects. In the same room hangs Mr. Leslie's only work, "Queen Rose of the Rosebud Garden of Girls" (60), a set of pretty English girls on the terrace and steps of a garden, with a straight line of hedge behind; grace and prettiness there is in the figures, but the whole *facture* of the picture is dry, hard, and flat, there is no sensation of air and life. Mr. Briton Riviere paints a lion with a Cupid riding on his back (his face to the tail), under the title "A Master of Kings" (46), the lion looks rather long, but he is a grand beast, and there is fine colour and a real element of imaginative creation in the work, which is far superior to "The Haunted Temple" (38), where the realism of the tigers in the foreground rather clashes with the idea of the supernatural. That is the difficulty of combining animal painting with ideal and especially supernatural subjects. Among other things to be noted in Gallery I. (we exclude landscape for the present) are Miss M. Dicksee's picture of Angelica Kauffman at Reynolds's studio (the head of Angelica is one of the most bright and charming things in the exhibition), and Mr. Boughton's twilight winter scene "The Home-light" (66).

Mr. Frank Dicksee produces under the title "Leila" (97) a very brilliant and successful study of a blonde eastern girl in bright red embroidered draperies, oddly set off by its next neighbour, Mr. H. Mosler's "Last Moments" (96), one of the "harrowing" order of pictures, in which dirt and desolation are predominant; pathetic, but pictorially repulsive. In the same room is Mr. Dicksee's pretty and impossible diploma picture, where a modern girl and her little sister, clutching up their classic draperies, are hurrying away from the bank in a quiet reach of the upper Thames where they have been disturbed in bathing by the alarming apparition of a Norse galley suddenly rowing up the stream from Henley Regatta: at least that is the general impression conveyed. There are so few painters who, like Mr. Tadema, give a really antique air to figures in an antique scene. Mr. Prinsep does not, in his large picture of "The Broken Idol" (368), where a Christian slave is brought before his mistress in the atrium for having "renversed" an idol in a fit of holy indignation. We have the usual thing; Christian slave pointing upwards, modern lady in Roman dress looking touched and puzzled; the master of the slaves is the only real-looking figure. Artists who are going to paint Roman ladies of the Empire should read Mr. Swinburne's "Faustine" first.

Mr. Riviere's "Dead Hector" (242) is another failure in a poetic sense; there is the naked corpse of a man on his face, and there are jackals, but we do not realise that it is Hector; it is painted for the jackals. In "A Day of Mortification" (88), where a lady going to church orders the dogs to stay at home, the balance is complete and the picture a success. Mr. Marks's "The Great Auk's Egg" (228), shown by one old connoisseur to another, is also a perfectly balanced work of its kind, in its author's best way.

The centre place facing the President's "Hesperides" is occupied by M. Bouguereau's "Distraction" (250), a maiden and cupid, one of those perfectly executed academical works which yet remain mediocre in their very perfection. Galleries III. and IV. present us with two noteworthy nudes, Mr. Jacomb-Hood's "Summer" (219) and Mr. Hacker's "Syrinx" (344), a curious contrast in treatment. Mr. Hacker's figure is conventional in design, the figure reduced to "Classic" lines, but realistic in colour; Mr. Jacomb-Hood's is realistic in drawing, without even beauty in the head and face, but conventional in colour, a study of a white body against whiter drapery thrown behind on the rocks. It is an unusual and interesting work, though the Syrinx will probably have the popular vote.

Among works of pure imagination there are few more interesting than Mr. Arthur Hughes triptych "Viola d'Amore" (893-4-5), a real little allegorical poem in painting. A girl in the first picture tunes the viol, looking brightly up to the open window, where are seen the blue sky, the may-blossoms, and the birds; in the second she sits on a terrace, holding the instrument, but a winged cupid behind handles the bow, and she sits amazed at the sound; in the third she is in her room at evening, an embroidered curtain making a kind of suggestion of a bridal veil floating over her head, the viol is drooped in her hand and a spray of yellow flowers is grasped with it. The three scenes are full of charming bits of detail, though the whole is far too refined in thought to be popular; one is almost surprised to find it in the Academy, and then to compare it with some academicians' works on the line! Miss Henrietta Rae has also done well in her "Mariana" (557), Tennyson's Mariana, a beautiful woman seated at the window with a weary look; among the details may be noticed the delicate way in which the embroidery and ornaments on the bosom of the dress are indicated. Mr. Solomon's "Orpheus" (666) is a large ideal work in which the size is more striking than the ideality; Mr. Arthur Hacker's "Annunciation" (901), another large work of the ideal class, is far superior to this, but fails in what should be the central point of interest, the face of the Virgin, which is deficient in expression.

Among figure subjects of more prosaic meaning are two noteworthy works in Gallery XI., Mr. La Thangue's "After the Gale" (977), a big painting of a small boat in which an injured man from a wreck is being sculled home, and which is a capital study of rough seafaring figures in full daylight; and Mr. Melton Fisher's "A Summer Night" (1,023), a most clever representation of figures grouped by lamplight in a verandah overlooking Venetian waters, and containing some remarkably pretty women. This is a picture of the "new school," in which detail is indicated rather than suggested. In regard to both it is a question whether they are not far too large for the interest of the subject; and the same remark applies to Mr. F. Hall's clever and brilliant interior of a "vet.'s" surgery (apparently), with a number of bottles and knick-knacks, and the vet. preparing to prescribe for a fat King Charles which has come there as "The Result of High Living" (1,041). The execution is brilliant and clever to a degree; but is it worth all this canvas?

Among works in the way of *genre* painting which justify themselves by their subject and scale is Mr. Bridgeman's spirited "Lawn Tennis Club" (102), a thoroughly English scene by an artist American by birth and French by education. Mrs. Forbes's "A Minuet" (343) should be looked at for its originality of design and colour; Miss Bird's "Orphans" (374), an orphan-school scene, and (in a much more serious key) Mr. Tebby's "Alone" (511), an interior with one seated figure of a girl in mourning, marked both by true pathos and very fine and careful painting. Mr. J. R. Reid's "The Mate of the *Mermaid's* Wedding" (513) is a good crowded scene of fishing town life, rather recalling Mr. Fildes's "Village Wedding" some years ago; many of the figures are admirable studies, and one is glad to find that the painter has cast aside those unfortunate experiments in a violent system of colouring which had threatened to spoil him altogether not long since. "A Bit of a Yarn" (660) by Mr. C. T. Garland is admirable for the varied expression in the three children's faces.

Among pictures dealing prominently with architecture two by Mr. Woods should not be missed by any visitor interested in architecture, "The Church of the Frari and School of San Rocco, Venice" (157), admirably solid and brilliant in its painting, and a more interesting because more unusual subject, "In the Belfry of the Campanile of St. Marks" (233); there is also a good study of the "Grande Mosque de Tangiers" (912) by M. Emile Wauters. We may mention here also one admirable piece of still-life painting by Miss Catherine Wood (Mrs. R. H. Bright), "Onions" (317), a piece of imitative painting perfect in its way, and justified by the pithy quotation from Browning—

> —"Paint these
> Just as they are, careless what comes of it?"

Portraits are not perhaps striking this year, but include a good many thoroughly good ones. Mr. Herkomer's large group of portraits under the title "A Board of Directors" (458) is one of the most important works in this class; and among others we may specially name Mr. John Collier's brilliant but somewhat too stagey portrait of "Miss Julia Neilson" (210), Mr. Tadema's remarkably vivid likeness of "Mr. Alfred Waterhouse" (222), Mr. Ouless's "Herbert C. Gibbs Esq" (305), noteworthy for its simplicity of style and pose; and Miss Anna Bilinska's "Portrait de l'Auteur" (502), a frank piece of Bohemianism, repellent in colour but wonderfully spirited in character and execution. Two pictures which might be portraits but are not called so should not be overlooked, Miss Gulland's head called "Honeysuckle" (438), a very fine piece of colour, and Miss Mary Field's charming half-

length called "Daisy" (491), a picture which both for colour generally and for the fine ripe painting of a very sweet face, merited a more central position than it has obtained.

We had nearly passed over the finest animal painting by far in the room, Mr. Swan's "Thirst" (454), a picture of two leopards drinking. The remarkable element in Mr. Swan's animal pictures is the way in which he realises the action and life of savage animals in their wild state. His leopards are not as taking animals as picture-book leopards in pretty attitudes, but the sprawl of the one facing the spectator, his forepaw and shoulder splayed outward in his eagerness to stoop to the water, has something thoroughly animal about it not to be easily forgotten. But we must turn to landscapes, of which there are some very fine examples this year, and many more or less worth study.

The landscapes of the year afford, taken altogether, an interesting exemplification not only of the inexhaustible variety of nature, but of the variety of ways in which nature may be regarded in painting. They might be classed under the heads of pictures simply representing nature, and pictures representing the painter's method of translating nature, though we will not venture to follow out the classification in detail in regard to the pictures exhibited. Perhaps the most powerful work of the year is Mr. Brett's "The Isles of Skomer and Skokham" (596), in which this painter has surpassed himself in the treatment of sea. He has quitted that representation of calm sunlit sea of which we have had perhaps rather too many repetitions, and shows the sea rolling in dark foam-crested billows under a fresh breeze, with a realism in regard to movement, colour, and reflected skylight, which is extraordinary. He exhibits several other works which are for the most part repetitions of effects with which he has familiarised us. Mr. H. Moore's principal work, "Perfect Weather for a Cruise" (19), gives fortunate evidence that he has entirely recovered from the painful accident which incapacitated him from painting for some time. Sea pictures otherwise are not very numerous, but attention should be given to one by Miss A. J. Walters, "A Bright Gleam from the West" (673), which is remarkable for the truth and tenderness of its aërial effect and the subtle tones of light on the water. Mr. H. W. B. Davis's paintings rank as landscapes, though the animal painting in them is of nearly equal importance. His "Springtime" (191) is beautiful in its rendering of the delicate light on the slopes of the distance; his "Summer Time" (665), with sheep in the foreground under strong light, is perhaps a little too hard in the foreground, though we thank him for not shirking sunlight (as some painters of "summer" do), but the "Shadow of Evening" (671) is an almost perfect work of its class; it shows the foreground sloping down from the spectator, shadowed from the western sun, which lights up the rising land beyond with a calm warm radiance; the whole thing is as true as it can be. Mr. Davis has never been seen to more advantage than this year. Mr. David Murray's principal work is "The White Heat" (919), an expanse of level meadows half flooded, under an empty summer sky; but we do not realise the effect of heat suggested by the title. "The River Road" (179) is a finely composed landscape, with a mass of dark trees and a bridge on the right; this is one of the school of landscapes composed, as one may say, from one side, of which another and very fine example is Mr. C. E. Johnson's "Evening Shadows" (460), a beautiful specimen of the purely natural landscape effect, in which the painter is transcriber rather than translator. There is a taste at present for flat level landscape with a large sky, as in Mr. Murray's "White Heat" just mentioned, and Mr. East gives a fine example of it in "Hayle, from Lelant" (104), where the centre of the canvas is occupied by the flat sands of a nearly empty tidal river or estuary, the houses gleaming warm in the sunlight in the distance. Mr. Logsdail, who has not been much seen as a landscape-painter, produces a somewhat similar class of effect in "Venice from the Public Gardens, Early Morning" (125), a very pleasant work. Mr. MacWhirter's "June in the Austrian Tyrol" (120) is remarkable as a painting of a profusion of bright wild-flowers occupying the banks in the foreground; it is a *tour de force*, but gives rather too much that impression, and does not quite convince us of its truth. Nor does Mr. Parsons's "The Flowers appear on the Earth" (184), they seem rather to appear on a surface of green baize, displaying none of the texture of grass. Mr. H. G. Hewitt's "November" (367) is a landscape of great merit by an artist whose name is not familiar to us. Mr. East's "Autumn Afternoon" (591) is one of the pleasantest of the quieter landscapes of the year; and Mr. W. L. Wyllie's "Spanish Armada" (691) should not have been overlooked among sea-pieces. Mr. Arnesby Brown's "Low Land" (988) is a very good work of decidedly French tendencies, one of those in which the interest lies as much in the idiosyncrasy of the painter's treatment as in the scene itself; the same might be said, though in rather a different sense, of Mr. North's "Druidscombe, Somerset" (602) which has a great charm about it, but it is not nature so much as nature idealised. Mr. Adrian Stokes's "Sunset, Roman Campagna" (475) contains a fine sunset effect, and would strike one more perhaps if it were not so entirely dominated in our recollection by his much more powerful Campagna landscape in the New Gallery. Mr. Vicat Cole's large picture of "Westminster" (306) may we suppose be classed as a landscape; as such we do not like the general tone of it, which is muddy and disagreeable, and we object even more strongly to the theatrical and stagey painting of the Victoria tower, which is loaded with yellow in order to get a sunlight effect, to the extent of making the main lines of the tower appear as if gilt as well as the lantern. As a painting of a great building it is a thing that no architect could regard with satisfaction. We may also class with landscape Mr. A. Goodwin's remarkable illustration of the scene in Dante's *Inferno* where Virgil and Dante attempt to enter the city of Dis. Here, as in the poem itself, we are in a sense out of contact with nature, but it is worth while to try to realise in painting some of Dante's lurid and tremendous scenes; the attempt has not been often made (partly no doubt on account of its extreme difficulty), and on the whole Mr. Goodwin has been successful; he has produced a grand and striking effect which assists us in realising Dante's conception, and if a picture does that the attempt is justified, though it is moving no doubt on dangerous ground for painting. Mr. Goodwin has some special faculties for illustrating Dante, and we should not be sorry to see some further attempts at it from his hand.

There are many smaller pictures of interest besides those we have named, and in the process of going through these notes we have been more than confirmed in our first impression, that this year's Academy is one of great and varied interest. Of sculpture we will say something on another occasion.

THE 19TH CENTURY ART SOCIETY.—Saturday, the 14th inst., has been appointed for the Private View of the Summer Exhibition (the twenty-seventh) of the 19th Century Art Society at the Conduit-street Galleries, and the exhibition will open to the public on Monday, the 16th inst. We are informed that the Society has been recently considerably strengthened by the enrolment of many additional well-known artists as members. With the view of enabling the members to exhibit their works in a thoroughly adequate and advantageous manner, the requisite alterations and improvements have been carried out by throwing the Maddox-street Galleries into those already occupied by the Society, thus forming one of the most important and attractive suites of galleries in London.

TESTS OF BUILDING-STONES.

WE have received an excerpt from the current volume of "Minutes of Proceedings of the Institution of Civil Engineers," entitled "Building-Stones of Great Britain—their Crushing Strength, and Other Properties," by Mr. Thomas Hudson Beare, B.A., B.Sc., Assoc.M.Inst.C.E., which is deserving of notice as an example of how elaborate "tests" may be carried out on stone, and yet may possess but little practical value. Seeing that the excerpt is merely a pamphlet, thirty-one pages in length, including the appendices, it will readily be understood that the author deals with a comparatively small number of building-stones. We do not find in it a single reference to any of the building-stones of Wales. Tests on the following properties of English and Scotch stones are recorded: crushing strength, density, absorptive power as a test of weathering, effects of low temperature, and, lastly, an inquiry into the behaviour of stone under gradually increasing pressures, with a view to determining the modulus or co-efficient of elasticity. The author commenced work by applying to various quarry-owners for samples, instead of obtaining them from the quarries himself. All the specimens were carefully prepared in the form of cubes, $2\frac{1}{4}$ in. in the side, before being experimented with. The crushing tests were carried out in the large Greenwood & Batley testing-machine belonging to the laboratory of University College, London, which is a horizontal machine of 100,000 lbs. capacity. In every case, except two, the specimens were placed in the machine in such a way that the pressure was applied on the bedding faces,—*i.e.*, the axis of pressure was perpendicular to the planes of the quarry-bedding. The author shows,—and this is decidedly the most interesting part of his communication,—that the practice of interposing sheets of lead, or thin pieces of soft wood, between the dies of the machine and the specimens to be tested, does not yield a fair result. Of course, it is not the first time that this has been pointed out,—a paper on the subject was read to the British Association a few years since, whilst Professor Unwin, in his "Testing of Materials of Construction," also deals fully with it, and the question has received much attention in America; but Mr. Beare's observations are especially useful, as being additional evidence derived from direct investigation. His experiments indicate that, by using lead, there is an enormous reduction of strength, varying from 36 to 55 per cent., and the stronger the stone the greater the loss. Therefore, he prepared the surfaces of the stone with a thin layer of plaster of Paris only, and applied them directly to the steel faces of the dies of the testing machine. It is a pity, however, that the author was unable to deal with samples of larger dimensions than $2\frac{1}{4}$ cubic inches. Such small pieces do not fairly represent the lithological and other physical features of any class of stone, so that the majority of the tests recorded can have but little practical value. Large blocks of stone used for ordinary building purposes very frequently have a number of minute—microscopic—fractures running through them for short distances, which considerably weaken the material as a whole, and 2-in. cubes are not sufficiently large to reveal the effect of these. But even supposing the tests were satisfactory in that respect, it is difficult to deduce much of practical value where the results on the same stone vary from 288 tons to 460 tons per square foot, as they do in Gunnerton sandstone; 341 tons to 579 tons as in Corsehill; 171 tons to 245 tons as in white Grinshill stone; 395 tons to 546 tons as in white Mansfield; 383 tons to 703 tons as in a yellow magnesian limestone; 74 tons to 128 tons as in Corsham Down Bath stone, &c., &c. Yet the author informs us that "the figures for crushing loads are very closely concordant." True enough, the granites give higher results than dolomites,

dolomites than sandstones, and sandstones than limestones, but no elaborate tests were required to carry conviction on those heads. In speaking of the absorption of water tests, the author states that "the relative amount of absorbed water must be a very good guide to the relative weathering power of stones, since it shows to what extent deleterious agents in rain-water and fogs will penetrate the stone," which, as we have on previous occasions pointed out, is a very unfounded, though prevalent, notion.

NOTES.

THE *conversazione* of the Royal Society, held at the Society's apartments, Burlington House, on Wednesday last (the 4th inst.), although successful so far as the attendance of a large number of influential scientists was concerned, was a little disappointing in regard to the exhibits. Many of these latter were by no means novel, and included minor discoveries whose chief claim for space consisted, apparently, in their startling ocular results, or the noise they made. The really interesting portion of the exhibits were chiefly in the domain of electricity, as usual. Amongst the more prominent, we noticed the various electrical apparatus shown by Captain Holden, R.A. One consisted of a high-speed chronographic pen with automatic re-setting attachment, the object of which is to take a number of successive records of short intervals of time on a revolving drum or moving surface, under as nearly as possible the same conditions. Another was an improved compensated voltmeter, on the hot-wire system, a very simple instrument. Mr. W. Crookes, F.R.S., showed some experiments with electrical currents of high potential and extreme frequency, which were somewhat similar to the celebrated demonstrations of M. Tesla. The physiological action of the high frequency current is feeble, and Mr. Crookes in dealing with a current having an electromotive force of about 100,000 volts, the frequency of alternation being 1,000,000 per second, to show its harmlessness caused it to pass through his body, and then communicated it to bystanders, who experienced merely a slight shock on its application. Mr. J. Wimshurst exhibited some interesting phenomena connected with Leyden jars with wire coatings; and Professor Oliver Lodge, F.R.S., produced interference bands by projection, electric sparks in and to water, illustrating lightning effects, multiple flashes, &c. An electric chronograph, designed for the measurement of the velocity of projectiles, and small periods of time in physiological research, was shown by the Rev. F. J. Smith, M.A.; and Messrs. Pyke & Harris had some high tension apparatus. Dr. G. Gore, F.R.S., exhibited a remarkable electrolytic formation of copper in the form of wires, produced during the ordinary process of electrolytic refining of copper. A selection of the proof plates to the first memoir of the Archæological Survey of Egypt, which, we learn, will be published very shortly, were shown on the wall of the Council room by Mr. Percy E. Newberry, by permission of the committee of the Egypt Exploration Fund. Mr. A. P. Maudslay showed photographs of ancient Central American monuments and buildings, some of which have been recently described in our columns. The Royal Geographical Society and Mr. J. T. Bent had rather an extensive series of finds from Zimbabwe ruins, Mashonaland; there was also a small model of a circular temple at the same place. This temple is built of small blocks of granite, without mortar; it is 280 ft. in diameter; the walls are 32 ft. high and 17 ft. thick in parts, and the solid round tower is 34 ft. high. Various photographic, astronomical, natural history, and other objects were also exhibited.

AMONG the cases submitted to the Board of Trade in 1889, under the "conciliation" clause of the Railway and Canal Traffic Act, was a complaint by the Liverpool Chamber of Commerce and others of undue preference in the rates from Birkenhead to Birmingham. Meetings between the complainants and the railway company's representatives were held at the offices of the Board of Trade, but no satisfactory settlement could be arrived at, and the Board gave the matter up as being too wide and complicated a problem for them to deal with. The rates complained of were those charged by the Great Western Railway for the carriage of grain; but the principle involved was one of general interest, it being alleged that Birkenhead traders were prejudiced owing to the rates from that port to Birmingham being unduly high as compared with those from Bristol and Cardiff. The case has now been submitted to the Railway Commissioners, and they gave judgment on Monday last, to the effect that the action of the railway company did not constitute an undue preference under the Act. Taking all the facts of the case into consideration, this cannot but be regarded as a satisfactory decision, although the Birkenhead traders certainly had a strong case. From Cardiff and the Bristol Channel ports the Great Western have to compete with various other means of conveyance, and must either charge comparatively low rates, or allow their competitors to carry the whole of the traffic. If they were compelled to regulate their rates from these ports to Birmingham by those in force from Birkenhead, they would simply throw away the former traffic and nobody would be benefited. If they had overstepped their Parliamentary powers in the Birkenhead rate, a different decision would have been given; but it did not appear that the rate is in itself excessive, and Mr. Justice Wills expressed himself satisfied that the Liverpool traders were able, notwithstanding the difference in rates, to compete effectively in the Midland markets with the traders in the West. We should be very sorry to see any trade, unfairly prejudiced by a railway company, make an ineffectual appeal to the Commissioners; but they are clearly right in looking at such matters from all points of view,—not excepting that of the consumer, to whom the maintenance of effectual competition is often both a benefit and safeguard.

THE two interesting speeches at the Royal Academy dinner were Mr. Balfour's and Professor Butcher's, the latter of which, full of clever and piquant points of criticism in regard to art and literature, came rather as a surprise. His remarks on "the cult of the meaningless," and his story of a critic of the new school who explained to him the artistic object of a certain portrait—"Think away the head and face, and you get a residuum of pure colour"—are much to the point at present. In literature, for which he spoke, Professor Butcher said that such a principle, form without substance, meant sure decay. Art and literature are not quite parallel cases, but the warning in regard to art is certainly needed just now. It is refreshing to find in Mr. Balfour an ardent politician whose political fighting has not deadened his love of art. His lament over the fact that such monstrous things as the Charing-cross Station and railway viaduct should be allowed there at all to spoil a site with such opportunities as the Thames Embankment, will come home to the sympathies of many of our readers. But when Mr. Balfour laments, further, that the "great public," whose property such a site is, cannot make its voice heard, we fear he was attributing to the great public perceptions which it does not possess. The great public of England is absolutely indifferent to any question of architectural beauty, and would ask no questions about the ugliest railway viaduct than whether it was convenient and safe; on those conditions, it may be as ugly as any engineer likes to make it, for all the public care.

THE action of Macleod *v.* Thrupp, which was tried this week before Mr. Justice Wills and a special jury, exemplifies the great care necessary in putting a value on property when money is to be lent on the security of it. The action was by a lady against her solicitors to recover a sum which she had lost by reason of the property which was the security for the loan proving not to be of sufficient value when realised. The sum advanced was 3,100*l.*, in 1879, the security, two sets of property in Fulham; both properties, when sold in 1890, realised together only 1,360*l.* The opinion of a surveyor had been taken as to the value of the first security; he advised that 2,500*l.* might be lent upon it, and he estimated the value of the buildings on it to be 3,200*l.*, there being in addition the security of the freehold site. The jury returned a verdict for the plaintiff for the difference between the sum advanced and that which the property fetched when sold. But the point which we desire to emphasise is the great caution required by professional men when advising on these matters. House property, as we all know, is liable to fluctuations, but the figures which we have given above, as printed in the report of the case, appear to show that a margin for contingent shrinkage in the value of the property had not been,—in this case at least,—properly taken into account.

THE new platform at Euston Station for some of the local traffic has, undoubtedly, helped to make the despatch of the longer distance traffic both easier and more convenient to passengers. But this new local platform is at present inconvenient for those using it, as there is no connexion by means of a bridge between it and the main platform. Not one passenger in ten can discover the local booking-office,—a mere shed near the gate for the departure of cabs from the arrival platform. Moreover, not every local train leaves from the new platform, so that there must always be confusion with the present makeshift arrangements. But in any event, a bridge should connect the new platform so that passengers may enter in the usual manner and cross directly to the new departure platform.

THE case of the London County Council *v.* Pearse, heard before Mr. Baron Pollock and Mr. Justice Williams, settles the matter (which we had regarded as already settled) whether a builder's movable office on wheels is a structure within the meaning of the Building Act. The plaintiffs contended that the case came within the Act, but the two Judges both concurred on Tuesday in giving judgment for the defendant. The judgment appears to us to be in accordance with what we should call the common sense of the matter.

IN districts which are fortunate enough to be within the area allotted to an electricity supply company it is almost as common to wire the houses for the electric light as to fit them with the necessary gas-pipes. A natural consequence of this is that new systems of wiring are constantly being devised, and Messrs. Cook, Smythe, & Payne have patented a "fire-proof system of conductors" which are usually arranged on the concentric principle. An inner metallic tube or rod is kept apart from an outer tube by means of glazed earthenware rings or studs, and the combination, which forms the two conductors, is mechanically protected by a third tube. Wherever rods would be used for hanging pictures or curtains, &c., these conductors may be employed. This system, like that adopted by some of the supply companies in their mains, relies upon air for the insulating material. In practice, the insulation resistance has not been found to be so high as was anticipated, but within a dry building better results may be obtained. The convenience of this form of conductor need not be pointed out, but it is not free from risk. It would not be considered prudent to hang weights from gas-pipes, and, though

electricity cannot leak like gas, any undue strain might bring the positive and negative leads into dangerous proximity.

ON the 26th of last month the Duke of Devonshire laid the foundation-stone of St. Werbergh's, Derby. For this church, to be erected at an estimated cost of 9,000*l.*, Sir Arthur Blomfield was chosen architect, as we announced on June 14, 1890. The old church, which yet stands by Wardwick, at foot of Friar-gate, and once belonged to Derley Abbey, has,—like its more famous neighbour All Saints',—a Gothic tower, rebuilt after the storm of 1602, with a later nave and chancel after the Tuscan order. Here are a monument by Chantrey; and a font cover, a brazen pelican "in her piety," latterly serving for a lectern, given in 1711 by Charles Benskyn. Boswell tells us that Dr. Johnson set out with Mrs. Porter on horseback from Birmingham to be married in Derby. It is not generally known that the wedding took place in this church. The register contains an entry, dated July 9, 1735, thus:—

"Mar. Samll. Johnson, of ye Parish of S. Mary's, in Lichfield, and Elizh. Porter, of ye Parish of S. Phillip, in Birmingham."

Having adverted to the history of bridge-chapels in our illustrated articles of November 22 and 29, 1890, and a "Note" on March 28 following, we may say here that the chapel, with a floor-space of about 45 ft. by 15 ft. on St. Mary's-bridge across the Derwent, which was used in turn for a Presbyterian meeting-house (*temp.* Charles II.), a residence, and a carpenter's shop, was re-fitted and licensed for service in 1873. A view of it will be found in Fullarton's Gazetteer (1843). Dr. Erasmus Darwin practised for the last twenty years of his life in a fine Elizabethan house, now, or lately, No. 15, in Tenant-street. In the grammar-school, founded, 1170, by William Durdant, Bishop of Lichfield, and William de Barbâ Aprilis, were educated Joseph Wright, painter, and Flamsteed, our first Astronomer Royal. The school, which recently returned to its original situation at St. Helen's, claims also Thomas Linacre, founder of the Royal College of Physicians, and two Archbishops — Juxon and Vernon Harcourt—amongst its *alumni*.

THE Danish Art School of Needlework and Embroidery gave a private view on Monday, the 2nd, at 12, Queen's-road, Bayswater. The school is in connexion with the Royal Technical College for Ladies at Copenhagen, and classes are held in embroidery, Swedish wood-carving, art weaving, and lace-making. The embroideries were rather ordinary: inferior in design to the same class in South Kensington, and perhaps in execution. In the wood-carving and metal-work there were many very nice things, especially some paper-knives in metal inlay. The old Celtic designs in the woodwork and metal inlay were quaint and charming, and the work was beautifully finished. In an upper room visitors were initiated into all the mysteries of the hand-loom, and very pretty it was to see the shuttles flying swiftly to and fro, and hear the sweet foreign accents of the Swedish ladies, who explained the working of the looms. Very pretty; and the looms would undoubtedly look very picturesque in a boudoir; but we cannot understand anyone with much artistic feeling sitting a whole day weaving a chamber towel, which after all is not artistic, it is merely a good piece of woven stuff with a conventional border at each end, which border could as well be done in a machine. Embroidery, of course, is an art; weaving merely requires practice, and, given a pattern, anyone with ordinary perceptions could do it. The patterns seemed to us very commonplace, with the exception of one or two pieces of tapestry; one represented a marriage scene, in the centre an altar with three lighted candles, the bride and bridegroom on each side in Swedish dress, and attended by four solemn storks, who are supposed to bring good luck to the happy pair.

IN our columns of the week before last we gave a short notice of the death of Mr. R. J. Johnson. A few words more on his work and career will not be out of place. His work was remarkable for the way in which it was carefully thought out to the smallest detail, whilst in house-planning, in which he was remarkably successful, convenience was combined with great charm of invention. Preferring the study of architecture to that of civil engineering, he was apprenticed to Mr. Middleton, the father of Professor Middleton, of Cambridge. He was afterwards in the office of Sir Gilbert, then Mr. Scott. Returning to the north, he purchased the business of Mr. Dobson, a man well known in times past in Newcastle. In that city he practised with much success, and was appointed Diocesan Surveyor to the Dioceses of Durham and Newcastle. Among the churches he built or repaired, may be mentioned the repair and refitting of St. Nicholas, now the Cathedral of Newcastle; the Chapel at Castle Howard; Monkwearmouth Parish Church; Cramlington Church; St. Hilda's, Whitby; St. Matthew, Newcastle; Transept of Hexham Abbey Church. Among secular buildings should be named Hodgkin's Bank, the College of Science, the Northern Insurance Office, and the Tyne Commissioners offices, all at Newcastle,—the last in conjunction with Mr. J. J. Stevenson. Among houses, Haughton Castle, on the North Tyne; Urpeth Lodge, Chester-le-Street; Provost Watson's house, Hawick; Mr. Pease's house, Pendover, Newcastle. Mr. Johnson was one of the very few men standing quite in the front rank of the profession, who continued to practise in the country instead of being absorbed in the great vortex of London.

ARCHITECTURE AT THE ROYAL ACADEMY.—II.

1618; "Edginton Priory Church, Wilts. View showing restoration of ancient parish altar;" Mr. C. E. Ponting. This is hung too high to be well seen; it is an interior view of a fourteenth-century church executed in sepia, and showing the restored altar at the further end. Perhaps a detail of the altar restoration would have been more to the purpose; little of it can be seen in the drawing.

1619; "Hall, Buller's Wood, Chislehurst"; Mr. Ernest Newton. A pendrawing of a moderate sized hall of a country house with pedimented doors and a ceiling divided into four by two beams or soffits at right angles; rather a mechanical kind of division; the surfaces of the ceiling are divided up into panelling in which hexagonal figures predominate. A certain character is given to the large window on the right by the introduction of a large arched rib spanning two of the lower compartments of the window. Altogether a pleasant bit of homely quiet domestic work.

1620; "Design for Boat-house and Entrance-lodge;" Mr. C. E. Mallows. A picturesque little pen-drawing of a boat-house of Gothic predilections close to the arch of an (apparently) mediæval bridge, but this may be only to keep up the fitness of things. The most characteristic point in the building is the way in which the entrance from the garden is scooped out of it, as it were, with the wall running in obliquely under the upper story of the building.

1,622; "Bronze Doors, Adelphi Bank, Liverpool"; Mr. W. D. Caroë. This is a well-executed tinted elevation drawing showing an attempt (unusual enough!) to make something artistic of a bank entrance. The doors are designed in panels with small sculpture subjects, the relevance of which to a bank is not apparent on this small scale, but might be if we could see the details. The fanlight space is filled in with colonnettes with a scroll ornament behind. In the masonry design of the doorway the twisted columns and their capitals seem hardly in keeping, either in style or proportion, with the carved brackets over them; a side elevation is rather wanted to show the working of the design. The whole thing is original, but a little wanting in refinement of detail; the bronze doors are the best part.

1,623; "Warnham Lodge Sussex;" Messrs. Batterbury & Huxley. This is, as appears from the small plan judiciously appended, an addition to an existing old house. It is a long block of black and white work on a solid basement wall, the timbers kept vertical, and a certain character given by the row of little carved posts which run all round just above the solid wall; but why cut these into the shape of buttresses, which is the last thing they can be compared to? The gables and the tall mass of brick chimney are effectively placed, and the whole is a picturesque bit of Domestic architecture of its kind.

1624; "Design for a Window, Jesse Haworth Memorial Church, Walshaw"; Mr. W. Pape. A three-light window, with the transfiguration represented in the three large centre panels, subjects from the New Testament in smaller panels below, and kneeling angels with trumpets in the heads of the lights; these latter are the most pleasing bit of the work, which is satisfactory but presents nothing original in idea or treatment.

1625; "Retable for St. Alban's Church, Teddington," Mr. A. H. Skipworth. This is a really original bit of design in a very cleverly executed pencil drawing with a little tinting. It should have been hung lower. There are octagonal colonnettes at each end, with a twisting ornament on them which gives them a certain character, Within these is a broad band of decorative work, foliage intermingled with sacred emblems, which runs horizontally along the whole design and is returned vertically within the colonnettes. Angels are introduced at the angles, and a further line of foliage enrichment and moulding above the wide band completes the design. Without the least pretentiousness, this is a really original and refined little bit of ecclesiastic decorative work.

1,626; "Design for Altar Cross, Carshalton Church;" Mr. Reginald Blomfield. Metal cross and candlesticks shown on a dark ground. The angles between the arms of the cross are filled in with a light scroll connecting the arms, and making an approximate quartrefoil with a leaf form apparently (cannot be well seen) in each of the four spaces. The wide heavy base gives a look of monumental security.

1627; "House in Connecticut, U.S.A." Mr. E. J. May. This seems a picturesque house, drawn in Mr. May's well-known style; a tower-like mass projects in the centre of the front, giving a marked character to the house, and the employment of three gables of the same size along the return side gives an architectural breadth to this part. Mr. May employs his favourite device of a window at the outer meeting angle of two walls, which is piquant but rather unconstructive. By the way, one of Vitruvius's reasons why the triglyphs could not have originally represented windows is that they were placed at the angle of a building, "where no one would place a window;" but we have altered many things since Vitrurius.

Numbers 1,628 and 1,629 we have already described; No. 1,630, "The Mount, near Wolverhampton," by Messrs. Grayson and Ouse, is a fine pen-drawing by Mr. Raffles Davison showing a central hall with a strongly-marked first-floor string carried round it, with the balustrade of the landing along one side. The ground-floor shows a considerable amount of architectural picturesqueness in the manner in which nooks and staircase openings are contrived out of different arches, and the corbelled-out balcony above is a picturesque feature of which the most is made in the drawing, which is an unusually good one, and with more effect of light and shade and consequently more power of contrast than its clever draughtsman usually allows himself.

1,631; "St. Paul's Cathedral," by Mr. H. H. Statham, is the original drawing for the lithograph published in January last as one of the *Builder* series of Cathedral illustrations; we merely note its presence here.

1,632; "Albion Church, Ashton-under-Lyne;" Mr. John Brooke.—This is a well-executed pen-drawing of a church in the received Gothic style, with the tower and spire forming the prominent object at the nearest angle. The stair-turret at the angle is well arranged and forms an effective feature in the tower. A small plan shows that the church is one of those designed with narrow side-aisles for passage only; flying buttresses are introduced over them.

1,633; "Ambone from the Cathedral, Salerno;" Mr. F. D. Bedford. Apparently a very good and effective piece of pencil drawing, hung too high to be well seen. It shows a

large spacious square ambo with a rich inlaid balustrade, supported on columns, three on each face.

1,634. "St. Peter's Church, Newton-le-Willows, Lancashire," Messrs. Demaine & Brierley. A church which derives a certain marked character from its large low square west tower, which is apparently oblong on plan with three large windows towards the nave roof and two on the other face. The drawing cannot be well seen, but there seems a general breadth about the treatment of the building which gives it a satisfactory effect as a whole. A plan is appended.

1635; "Chapel, Ridley Hall, Cambridge"; Mr. W. Wallace. Rather a heavy drawing of rather a heavy building, but it has the proper treatment of a college chapel in a somewhat ordinary Gothic style. The only feature of any originality is the turret at the south-west angle, the lantern of which is effective.

To No. 1,636 we have already referred.

1,637; "The Ulster Bank, College-green, Dublin," by Mr. Thomas Drew, shows that in Dublin the good old faith in Classic orders and pediments as the proper adjuncts and architectural characteristics of a bank is still retained. This is not however a common-place Classic front; there is a good deal of richness and originality in the decorative treatment of details, and one very effective point in the manner in which the top story between the large columns is set back, so that the latter, which are engaged columns below, become at their upper portion free columns with a deep shadowed recess behind shaft and capital. This is a distinctly original and picturesque incident. The capitals are not of regulation Classic type, but with a Renaissance freedom about them. The ground-floor is a plain rusticated wall, forming a good base to the whole. The spectator who is at first tempted to pass this by as one of the many bank fronts of the columnar type will find, on looking into it, that it is not a common-place piece of work at all, and differs materially from the average front of which it seems a type.

1,638; "Competition design for the Birmingham General Hospital; Corner of the Administrative Block;" Mr. W. H. Bidlake. We presume this was not a drawing sent in for the competition, but sent here to illustrate the picturesque qualities of the building. It shows a corner out of a large building, which groups very well without appearing unduly decorative for a hospital; the entrance to the administrative block, which of course is a legitimate occasion for a little architectural treatment, is marked by a projecting bay in stone with pilastered windows in the middle story, an open arcaded porch (an arch on each face of the semi-octagon) below, and a lightly treated open loggia or balcony above. The rest of the building that is shown is in brick. The main interest of the drawing is as a piece of architectural water-colour work, in which respect it shows an artistic freedom of execution and a feeling for colour which place it quite above the work of the "architectural draughtsman" as too commonly understood.

1,639; "New Organ for the Church of St. Mary, Bottesford;" Mr. G. C. Horsley. This is rather a hard pen drawing, nor do we think the design shows by any means as much freedom and effectiveness as the author's admirable organ-case sketch of last year; the general idea is more like the usual organ-case type. The best point in it is the bold large treatment of the foliage filling up the spaces on each side of the lower portion of the organ, flanking the keyboard. The same large free character is maintained in the scrolls on the top, but this kind of free semi-naturalistic treatment is better suited to fill in a space bounded by decisive lines than to be treated free as a scroll, in which case it gives a rather too ragged outline.

1640; "Design for a Town House," Mr. Herbert Baker. A dignified design of Italian type, with a strongly marked cornice, and a wide band of carved decoration in relief between the first and second floor windows. The tier of first-floor windows is given dignity and connexion by pediment heads and by niches between the windows, which would, however, have looked much better if filled with the sculpture, without which they have no meaning; and on paper at least sculpture can be introduced *ad lib.* The heavy square mass of the solid porch projecting outward to the pavement is rather an eyesore, and seems to want connecting more closely with the main design.

LETTER FROM PARIS.

IN spite of the serious considerations occasioned by the attempts and threats of the Anarchists, the Salon had a brilliant opening on "varnishing day," a profitable one for the Société des Artistes Français, thanks to the fashionable crowd which collected on an occasion more consecrated to spring fashions than to art. The formal opening took place on April 30, when, in place of M. Bonnat, who was kept away by a domestic loss, M. Paul Dubois and M. J. P. Laurens did the honours of the Salon to the President. The example set by the new Salon has not been without its effect, and the old establishment showed, this year, various improvements in its interior arrangements. Tapestries and hangings abounded, and the Salle de Conversation has been adorned with shrubs and flowers, and tapestries from the national collection, and the hanging line for the paintings has been kept lower. Lastly, in the central area occupied by the sculpture, a semicircle of trellis has been formed opposite the main staircase, which produces a good effect as a background to the principal sculptures.

The exhibition seems one of about average excellence. Some account of it will be given in a future number of the *Builder*. It may here be observed, however, that among the principal attractions of the year are the two ceilings, by M. Bonnat and M. Benjamin Constant, intended for the Hôtel de Ville, and a somewhat pretentious allegorical picture of the sculptor Carpeaux dying in the midst of his works, which descend from their pedestals to do homage to their creator. Among the sculptures are noticeable the decorative fountain of M. Peynot and the monument to Cabanel by M. Mercié.

Paris now possesses a third Salon rejoicing in the pompous title of "L'Union Libérale des Artistes Français." This new exhibition, which is to be open till June 20, contains about 600 works; but the result hardly justifies the new venture, for the collection includes little of interest, and the "Christ aux Outrages" by M. Groux, which the jury of the Salon made a mistake in refusing, is the only really powerful work to be seen there. The decorative studies of M. Mellocheau deserve notice however, and the still-life paintings by M. H. Stevens. The rest are below the level of the worst pictures of the ordinary Salon.

The "Black and White" exhibition is this year installed in the Palais des Arts Libéraux. It is divided into six sections: Black and white drawings; pastels and water-colours; modern engravings; old engravings; Japanese art, and sculpture. Altogether there are about 2,500 works, far too many, for the exhibits really worth study are lost amid a crowd of mediocrities. We may mention only the drawings by M. Renouard, the charcoal landscapes by M. Osbert, the rather mannered pastels of M. Carrier-Belleuse, and M. Sirouy's engravings after Prud'hon and Delacroix.

The first international photographic exhibition is also to be found at the Champ de Mars, near the entrance from Avenue Rapp. This very curious exhibition is divided into seven groups intended to illustrate the history of photography, its commencement, its progress, and its application to scientific, artistic and industrial pursuits.

Now that the Salon of the Champs-Elysées is open, the smaller exhibitions lose much of their interest, but the different special exhibitions of the past month deserve a word of recognition. First we may name the Pastellistes, among whom M. Besnard is still the defiant leader. Beside the works of this artist, open to much criticism but always original and interesting, may be named the contributions of MM. Jas. Tissot, Whistler, Billotte, Duez, and Lhermitte, as well as two fine studies by M. Puvis de Chavannes.

A small exhibition at the Georges Petit gallery is devoted to the works of six painters grouped under the denomination of "Les Inquiets." It may be said that every artist who loves his art and studies nature is an "Inquiet," always analysing his work and demanding of himself whether he has succeeded, so that the special assumption of the title seems hardly fair. Then there is the small exhibition which Mdlle. Louise Abbema forms every year at the Georges Petit gallery, the *résumé* of her work of the year, always full of charm, truth, and grace. At M. Durand Ruel's gallery we have had also a third exhibition of "peintres graveurs," where MM. Bracquemond, Guérard, Gœneutte, Hellen, and Lepère occupy a considerable place. Among the collection we may mention the very characteristic works in the Japanese manner by M. Henri Rivière, whose powerful execution shows great delicacy and sincerity. Etchings by the late Mr. Keene are also to be seen here, the fine qualities of which command great admiration.

Lovers of art have also been specially attracted by the too short exhibition of the works of Raffet, organised to raise funds for a monument to this remarkable artist, who perfectly understood how to represent in painting and lithography the military types of France. More than 500 subjects were got together in this exhibition, which was only open for seven days, and which served to bring before us, with a splendid mastery of style, the wars of the Revolution, the First Empire, and the Algerian and Roman campaigns. Most of the scenes composed by Raffet are very well known, but this exhibition brought out from private collections drawings entirely unknown and unpublished, in which Raffet reveals himself as the true painter of the French army, superior to Horace Vernet, Bellanger, De Neuville or even Meissonier, if not in drawing, at least in vigour and energy of representation.

Two new second competitions for the Hôtel de Ville decoration have just been decided. One is for the Salle des Banquets; the names of the five competitors have already been given, but no prize was awarded and the competition was cancelled, with a consolation fee of 2,500 francs to each competitor. It is to be hoped this will be a lesson to the authorities, who seem to wish for these eternal competitions for artistic work in Paris, which cost a great deal of money, and from which the highest class of artists stand aloof.

The object of the second competition is for the erection of a statue of Beaumarchais on the Boulevard of the same name. M. Allouard's sketch was charming in its aristocratic grace, but he has not received the prize, which has been awarded to M. Clausade's rather trivial figure. M. Clausade is a pupil of M. Falguière.

The *Builder* has recently spoken of the windows in the Church of St. Gervais, which have been seriously damaged by the recent dynamite explosions. We are now able to announce that the Service of Historical Monuments is going to make a valuation for the restoration, the expenses of which are to be defrayed by the Government. The sum required will be about 3,000 francs.

The gifts to the Musée du Louvre are becoming more and more frequent. We hear that M. Léon Moreaux has just made a donation of six fine pictures of the Dutch school, by Hondecoeter, Weenix, Téniers the younger, Ruysdäel, Adam Rynaeker, and Van Huysum. A few days ago the Museum received from M. le Député Clémenceau a curious portrait of Madame de Lamballe, by Gabriel, taken as the unfortunate Princess was on the way to the scaffold. M. Gerspach, Director of the Gobelins Tapestries, has in his turn offered to the section of the "moyen âge" a very rare Venetian mosaic of the twelfth century. We have also to announce the opening, which will shortly take place, of a new hall consecrated to Punic inscriptions, where will be gathered the votive steles, or funeral emblems, which are almost all the historical monuments that Carthage has left us. Paris is soon to have a new panorama, which has been painted by MM. Poilpot and Dupaty, the ordinary executors of this class of paintings, which are more commercial than artistic. This panorama, which is situated near the Palais de l'Industrie, represents the terrible naval combat, in which the French vessel "Le Vengeur" preferred sinking herself to surrendering. The scene is made rather too realistic for those who have not their sea legs, by a moving foreground, representing the oscillation of the sea.

The recent death of the painter Audrieu, who was the favourite pupil of Eugène Délacroix, and the trustee of many of his sketches, necessitates a public sale of many of the master's works. Among the number will be seen nearly all the sketches of the fine paintings that he executed in the Salon de la Paix, in the Hôtel de Ville. It is also M. Audrieu who possessed the notes written from day to day by Délacroix, and which contribute true memoirs of the greatest interest from the point of view of the history of Art. The memoirs which are announced as shortly to be published are very voluminous, and they will complete the corre-

spondence of Délacroix that Philippe Barty published some years ago. We may mention that the Académie des Beaux-Arts has just nominated Mr. Burne Jones as Corresponding Member in the place of Mr. Alma Tadema, who is now foreign associate.

M. Bonnat, Member of the Institute, has just sustained a great loss in the death of his brother-in-law, the painter, Enrique Mélida, after a long illness. He died at the age of fifty-five. M. Mélida was born at Madrid; he obtained a medal of the third class in 1866, and the cross of the Legion of Honour at the Universal Exhibition of 1889. He was an artist of talent, devoted to his art, very conscientious, and much beloved by the world of painters. In the Palais de l'Industrie last year, he exhibited a number of remarkable pictures, and he also occupied an important place amongst foreign artists.—We have also heard with much regret of the death of M. Jules Eugene Monnier, architect, one of the most devoted members of the Société Central, of which he was secretary from 1882 to 1889. Very modest and very hard-working, Eugène Monnier was much appreciated amongst his colleagues, both as a scholar and as a learned man. He first came into notice in the works of the church of St. Laurent, under the direction of Constant Defeux, after having been the pupil of Guenepin. He took part afterwards in the construction of the Vaudeville, built by Auguste Magne, and he became successively diocesan architect to Vannes, and "expert" in connexion with courts of justice at Paris. These positions secured him the respect of every one. We may mention amongst his works the restoration of the Château of Balzac, the construction of the flêche of the Church of Vauves, the transformation of the Château of Praslin at Auteuil, the Hôtel de Balzac, at Paris, the monument to Voltaire at St. Claude (Jura), and the very picturesque studio of his friend and compatriot, the old painter, Jean Gigoux. Monnier interested himself much in the art of drawing. He founded several prizes for its encouragement in the Department of the Seine, and every year, at the time of the Congress, the Central Society were able to award, thanks to his liberality, a medal to the instructor who had most distinguished himself. We may add that he contributed most powerfully to the Caisse de Défense Mutuelle, and that up to the moment of his last illness he did not cease to give his talent for the good of the Corporation. Eugène Monnier was born at Lure (Haute Saône) in 1839. His early death has been a great grief to his numerous friends and fellow workers.

THE SURVEYORS' INSTITUTION:

RESULT OF FELLOWSHIP EXAMINATION.

THE following candidates have passed the Fellowship Examination:—

Anscombe, E.
Brackett, F. H.
Castle, H.
Corderoy, A.
Davey, H. T.
Dudley, E.
Garrard, A. N.
Giddy, O. H.
Green, A. E.
Grogan, H. H.
Grover, A.
Hayward, F. G.
Kemp-Smith, J. F.
Martin, T.
Merry, A. W.
Mitchell, G. S.
Muller, J. J.
Ogden, M. G.
Osenton, G., Jun.
Palamountain, J. W.
Preston, S. D.
*Richardson, O. A.
Savill, E.
Slater, C. F.
Walker, J. A.
Webster, H. C.
Young, H. A. L.

* Crawter Prize, 1892.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS:

MEETING AT NOTTINGHAM.

A VERY successful meeting of the Midland Counties' District of this Association was held at Nottingham on Friday and Saturday, April 29 and 30.

The members assembled at the Exchange Hall at noon on Friday, where they were formally received by the Mayor (Mr. R. Fitzhugh), who made some remarks expressing his appreciation of the great usefulness of these peripatetic meetings of the Association, which enable the borough and county engineers and surveyors of the country to interchange ideas and experiences, and to see a great variety of works of municipal and sanitary engineering in progress.

Having said his words of welcome, the Mayor resigned the chair to Mr. T. de Courcy Meade, of Hornsey (President of the Association), who cordially endorsed some remarks made by the Mayor as to the ability with which the present Borough Engineer of Nottingham (Mr. Arthur Brown, M.Inst.C.E.), had carried out certain works of municipal engineering in the borough. The members of the Association, said Mr. Meade, always looked upon Nottingham as being one of the first towns in the kingdom in regard to matters of municipal engineering.

Some formal business having been transacted, including the re-election of Mr. Davis (County Surveyor of Shropshire) as District Honorary Secretary,

Mr. Arthur Brown, Borough Engineer of Nottingham, read a paper on "Municipal Works in Nottingham." At the outset he dealt with the subject of street subways, the necessity of which was now, he contended, becoming greater than ever. It did seem, he said, to be somewhat of a blot on our boasted civilisation that when a pipe had to be taken up, in a busy and crowded thoroughfare, the system usually adopted was to tear open the street, whatever might be the class of pavement, lay in the pipes, and then "make good" the surface. Those two little words,—"make good,"—covered a lot of ground, but were somewhat misleading; it was as much an engineering impossibility to immediately restore the paving over a newly-filled-up trench to its original condition, as it was a physical impossibility to heal a serious wound on a human body without leaving a scar. The first subways constructed in this country were in London about the years 1860-62, and the first subway outside the metropolis was constructed in Nottingham in the years 1861-62, in Victoria-street and Queen-street; these were followed a year or two later by subways in Lister-gate and Market-street, and in the year 1886 the author designed and carried out subways in Albert-street and Wheeler-gate. To show the value of such works in the street called Victoria-street, in which is situated the General Post Office, it was stated that there are, besides the gas and water pipes and connexions, no fewer than six pipes containing telegraph wires in this subway, that not one single stone was disturbed in this carriage-way for twenty-five years, and that in that period not one single penny was spent on repairs in this street. Mr. Brown next proceeded to describe some subways which are now being constructed under his direction, on what is known as the "Condemned Area." This site, which has an area of about 12,500 square yards, was declared an unhealthy area, and was purchased under the Artisans and Labourers Dwellings Act, 1875; it was covered with a wretched and disreputable class of property, and was very much overcrowded. Plans hung upon the walls showed the area and the method of laying out the site for building purposes. The streets form on plan the letter Y. The street on the west side is 48 ft. wide, and that on the east side 50 ft. wide, while the short length of street forming the tail of the letter Y is 60 ft. wide. The subway proper is 10 ft. wide and 8 ft. 6 in. high, with semicircular arch, and is ventilated by means of gratings at the surface level of the street about 48 ft. apart, also by three side entrances and by an open grating in the refuge at the lower end of the 60-ft. street. The sideways, which form the means of communication between the subway and the vaults, are placed ordinarily about 40 ft. centre to centre, and are 4 ft. high and 3 ft. wide. The sewer is constructed under the floor of the subway, and is a 15-in. earthenware pipe, with Hassall's patent single lined joint. Under the causeways on each side of the streets vaults are constructed, which are each 8 ft. 6 in. wide by 9 ft. 3 in. long, and about 7 ft. high; these vaults are rented by the purchasers of the building lots adjoining. The floor of the subway is laid with cement concrete brought to a smooth surface, and the floors of the sideways and vaults are laid with bricks. Along and under each sideway is laid a 9-in. pipe with a Buchan's disconnecting trap and air inlet, and beyond is a right- and left-hand junction for receiving the drainage from the properties. In the subway are fixed brackets, upon which may be placed pipes containing telegraph and telephone cables, the gas, water, and any other pipes being laid on the floor of the subway, or on iron standards fixed to the floor of the subway. At convenient distances hydrant chambers are built over certain of the sideways, in which are placed the fire hydrants and valves. By this method of construction access can be obtained to, and any alterations and additions made to, sewers, gas, water, and other pipes, and the house connexions therewith; and the fire hydrants and valves can be examined, repaired, and renewed without taking up or disturbing one single stone in the surface of the street. The life of the iron pipes and connexions in the subway is practically everlasting, as there is no rust, and the expense of relaying mains, and especially gas services, through this cause is saved. In the execution of the works very considerable difficulty was encountered in consequence of the number of rock cellars which were met with during the operations. A plan hung on the wall gave but a faint idea of the network of these curious cellars. One cellar is 370 ft. long, and would hold a regiment of soldiers; on the site of all the main walls borings were made 10 ft. deep in order to discover these cellars; the bulk of them are within a few feet of the foundation-walls of the subways, and these walls, of course, had to be carried down to the solid. Nottingham was in olden times, said Mr. Brown, called "Snotteyn-ham," which means the town of caves, and the name was singularly appropriate. As there is considerable doubt in the minds of some engineers as to the possible effects of a very severe frost on the water-pipes in the subway, Mr. Brown mentioned that during the somewhat severe frost in the early part of this year, the maximum, minimum, and 10 o'clock a.m. temperatures inside the Albert-street subway were taken, and the similar and corresponding readings were taken outside the subway. The results of these observations were given in a table, together with the maximum, minimum, and 9 a.m. temperatures at the observatory at the Nottingham Castle. The lowest reading in the open air at the Water Offices, outside the subway, was 19·2 on February 19, and the lowest readings in the subway, 40·7, 41·0, and 41·0 on January 16 and 17 and February 19; the highest reading outside the subway was 53·4, on February 7, and the highest reading on that day in the subway was 45·8, so that for a range of temperature outside of 34·2, there was only a range of temperature of say 5 deg. inside the subway, so that there is not the least chance, even with the present rigorous English winters, of the thermometers in the subways going down to anywhere near freezing point. The minimum temperature at the observatory at the Nottingham Castle, on February 19, was as low as 13·0, showing what the temperature was outside the town. As regards cost, it was, of course, rather heavy; the cost of the subway proper, including side-entrances, sideways, and everything appurtenant to the subway itself, was about 10*l.* per lineal yard. This does not include the cost of the sewer, as this would be common to any method of forming streets with or without subways, nor does it include the cost of the concrete foundation for roadway. The vaults under the causeways cost about 20*l.* each, and there being vaults under each causeway they cost, therefore, about 12*l.* per running yard of the street; these vaults are let on a rental of 1*l.* each per annum, or 5 per cent. on the outlay. The subways proper cost about 3,000*l.*, and there are 169 vaults, costing about 3,380*l.*; 3½ per cent. interest on 3,000*l.* is 105*l.*, but the profit on the vaults is 1½ per cent., as the money is borrowed at 3½ and 5 is charged, and this equals say 50*l.*, so that it resolves itself into this question, is it worth 55*l.* per annum to have subways in the two new streets referred to? The author of the paper thought there can be only one answer to the question, and that it must be in the affirmative. He did not urge that Town Councils should incur immediately a large expenditure of money on laying down subways in all existing streets: that would be impossible from its cost, but that in the case of new main streets, and where main thoroughfares are improved and widened, the opportunity should be seized to lay down subways, in order to minimise as much as possible the evils resulting from the continuous taking up and relaying of streets.

Turning next to notice the sewerage works, Mr. Brown said it was not necessary for him to give any lengthened description of the sewerage system of the borough, or of the sewage farm, those subjects having been somewhat exhaustively treated in a paper read by him before a meeting of the Association in Nottingham in 1885, and also in a paper read by the late Mr. Tarbotton at Hanley, in 1886. A reference to those papers would give all the information required on the subject. Attention

was called in those papers to one of the difficult problems which Borough Engineers have to face in some large towns, that is, what is to be done with the large amount of liquid and semi-liquid manufacturing refuse which is delivered from works where such processes as bleaching and dyeing are carried on? The subject is one which is of considerable interest, and the problem has been recently occupying the attention of the author and that of the Town Council. The total sewage flow of the borough in dry weather is about 6,125,000 gallons in twenty-four hours; of this quantity about 2,125,000 gallons per day gravitate down to the farm, and the remaining 4,000,000 gallons per day have to be pumped; the larger portion of the low-level sewage is brought down the Leen Valley sewer, and it is in the valley of the Leen where the principal difficulty regarding the manufacturing refuse is encountered. The river Leen is a small tributary of the river Trent, is 13¼ miles long, measured along its course, and the area of its watershed is about 40½ square miles. The flow of this river, of course, fluctuates very much, according to the seasons; gaugings were taken in the early part of 1891, and the lowest was on January 15, which was 901,549 cubic feet, or 5,634,681 gallons per day, and the highest gauging, taken during a somewhat heavy rainfall, was on January 24, and showed a discharge of 6,162,976 cubic feet, or 38,293,600 gallons per day. The normal discharge of the river in ordinary weather would be from 15 to 16 million gallons per day. On the banks of this river Leen, or contiguous thereto, there are about twenty-four bleach and dye works, of which number seventeen discharge their waste waters into the river Leen, or into the tributaries and brooks, or into special surface-water sewers in connection therewith, and the remaining seven have been permitted to discharge their waste waters into the Leen Valley sewer previously referred to. The water used by the bleachers, &c., is not taken from the river Leen, but is pumped from copious springs in the magnesian limestone, in which strata water particularly suitable for bleaching and dyeing processes abounds in large quantities. The works are not concentrated in one particular district, but are scattered about in the valley of the river, and the distance from the uppermost works to the lowermost works, measured along the course of the Leen, is not less than four miles. The waste waters turned into the river from these works is about 3,000,000 gallons per working day when the local trades of lace and hosiery are fairly good. The processes of bleaching differ in various districts according to the nature of the goods. The following, however, is the method adopted at one of the largest works in this district:—The goods to be bleached are first passed through cold water and then boiled in caustic soda (sodium hydrate NaHO) and crich lime; they are then run through a solution of bleaching powder (chloride of lime) and afterwards washed and run through a weak solution of sulphuric acid which is called "sours"; they are then boiled in carbonate of soda and soap, washed and run through chloride of lime, washed, and again run through "sours" (dilute sulphuric acid), and a final washing completes the operation. In some works strong liquor ammonia is used as an alkali instead of carbonate of soda, and in all cases, of course, very large quantities indeed of soap are used in the operations. The chloride of lime in the waste waters effects a precipitation of the soap and other solids when these waters reach the river Leen, and the result is the accumulation of the offensive and noxious slime and mud on the banks of the river. The filthiness of the water and banks of the river appears to be an invitation to the residents on the banks to still further pollute the river by throwing in all manner of rubbish, &c. The existence of the various mills on the river tends to aggravate the difficulty, and render the precipitation more effectual as the damming up of the water to provide head for the water-wheels forms a succession of settling ponds. To make matters still worse, the river Leen does not deliver direct into a fast-flowing river of large volume, like the Trent, but enters the Nottingham canal, which flows through a densely populated part of the town, and does not reach the river Trent for upwards of two miles. In this canal, which is practically stagnant water, the deposition of mud and slime is continually going on, and in warm weather the nuisance is considerable. The normal discharge of the river Leen is from 15 to 16 million gallons per day.; the discharge between 6 a.m. and 6 p.m., which would include the bleach and dye water, would in round figures be about 9 million gallons; the waste water from the works is, therefore, about one-third of the total flow of the river between the hours named. The problem is to effect the purification of the river, and the solution of this problem is not a very easy one. However, in reporting on this question to the Town Council, there appeared to the author to be three methods of solving the difficulty. 1. To connect the bleach and dye works in the district with the system of sewers, and allow their waste waters to mix with the ordinary sewage and flow down the main intercepting sewer; eventually it would be pumped and delivered on to the sewage farm, and therefore purified by broad irrigation on land. 2. To connect the waste waters from the works referred to with an entirely new and independent sewer, and conduct these foul waters to some convenient site and purify the same by precipitation and filtration. 3. To compel owners of works to abstain from polluting the river, and put down on their own works a plant or apparatus for purifying their waste waters, either by precipitation or filtration, or both. The first scheme would involve somewhat heavy engineering works, but nothing of any very particular difficulty; it would be necessary to increase the pumping plant at the pumping station, to provide an additional pumping main, and to buy about 225 acres of additional land at the sewage farm; this would make the total area of the sewage farm 1,134 acres for say nine million gallons of sewage per day. The author said he was perfectly well aware that there are several very grave objections to this scheme; in the first place the three million gallons of bleach and dye water has very little if any manurial value; this, however, may be as truly said of the greater part of the sink washings from more than half of the property in the town; further, it was a matter of doubt whether the bleach and dye waters when mixed with the ordinary sewage would have any harmful effects on the crops at the farm. Having given analyses of waste waters from various bleach and dye works, and also of mud from the bed of the river Leen, made by Dr. E. B. Truman, the Borough Analyst, the author proceeded to discuss the alternative means of dealing with the problem to be solved, and concluded his paper by describing the new Epidemic Hospital, which appears to be one of the most complete buildings of its kind in the country.

[We will resume our account of the meeting in our next.]

THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

THE NEW TRAVELLERS' CLUB.

THE sixth spring visit of the Association took place on the afternoon of Saturday, April 30, when a large number of members assembled to inspect the new Travellers' Club, Piccadilly, designed by Messrs. Thomas & Frank Verity. Mr Frank Verity kindly met the party, and gave an interesting description of the aims and objects of this interesting addition to the architecture of Clubland, and the difficulties met with in its design. The site is at the corner of Piccadilly and White Horse-street, and, as it overlooks the Green-park, the situation is an ideal one for a club. The entrance is from the new street, and leads into a spacious hall with grand staircase. The morning-room faces Piccadilly, and the coffee-room is placed on the right of the entrance facing White Horse-street. The first floor is occupied by a reading-room in front, and a two-table billiard-room and card-rooms at the back and side. The upper floors are devoted to bedrooms. A basement and sub-basement floors accommodate lavatories, kitchen, and offices. The work is hardly sufficiently advanced for an opinion to be formed of its aspect at completion. There are, however, scagliola columns and pilasters on the staircases, and glass mosaic pavings and portions of marble bands to the stairs visible. The front and side elevations are treated in Palladian Renaissance style, and are executed in Ham Hill stone, the present colour of which is a pleasant variation in the grey tone of most stone buildings in London. There is quiet dignity about the elevations, which is very pleasing. The building appears to be well planned and well lighted on all the upper floors, and this has been successfully contrived in spite of difficulties with adjoining owners as to light. The work has been executed by Messrs. A. Bush & Sons, and Mr. A. W. Earle has acted as the clerk of works.

ARCHITECTURAL SOCIETIES.

THE EDINBURGH ARCHITECTURAL ASSOCIATION AT LINLITHGOW PALACE.—On Saturday last a deputation from the Edinburgh Architectural Association visited Linlithgow in connexion with the proposed repairing of the ancient Palace. The deputation was met in the Palace-grounds by the Provost and Magistrates, the Town Clerk, and several of the members of Town Council. The object of the visit (says the *Scottish Leader*) was to assist the Town Council in the preparation of a statement as to what is actually necessary for the repair and preservation of the old structure. Accompanied by the local officials, the visitors made a minute inspection of the various parts of the building, and Mr. Ross, one of the deputies, submitted a number of written suggestions as to how the proposed repairs might be effected, and as to what was necessary for the proper preservation of the historical fabric. It is expected that steps will now be taken to have these suggestions brought under the notice of Parliament, and an endeavour made to induce the Government to augment the grant of 500*l.* voted recently for the repair of the Palace. In connexion with the subject certain important letters have been received by Mr. Ferguson, Town Clerk. Lord Rosebery wrote:—"I am in receipt of your letter. I have urged Mr. Munro Ferguson to take the line that if the Duke of Cumberland sequestrated the property of the Earl of Livingstone for taking part in the Rebellion of 1715, when the Duke of Cumberland's soldiers burned down Linlithgow Palace, it would be fair to apply the proceeds of the one to the repair of the other. That seems to me simple fairness and common sense." In his communication, Mr. Munro Ferguson, M.P., says:—"This is but one of the many examples where Scotland suffers from London Departments, where official regard for our national buildings is not to be distinguished from that indifference which prevailed too generally amongst us for 200 or 300 years. A better spirit has arisen in our time, and it is good to see Linlithgow leading the way towards the restoration of the finest of the ancient palaces of Scotland. Your action is worthy of every support, and your example cannot be too widely followed." Letters have also been received from Mr. M'Lagan, M.P.; Mr. Sinclair, M.P.; Mr. Fraser-Macintosh, M.P., and others, all promising to give the object their heartiest support.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A general meeting of this Society was held on the 29th ult., at the Law Institute, Mr. W. H. Thorp, the retiring President, in the chair. The hon. secretary, Mr. W. Carby Hall, read the annual report and balance-sheet, which were adopted. The report was of a favourable character, the Society having had a successful year. There had been a gratifying increase in the number of associates; the lectures were of great merit, and listened to by better audiences than usual; the library had been considerably increased, and now contained most of the standard works appertaining to the profession. The Society, anxious to further the education of its younger members, had made a grant of 10*l.* 10*s.* to the Yorkshire College towards the payment of a lecturer on sanitary science. The financial condition of the Society is satisfactory, there being a considerable balance at the banker's. The Travelling Studentship, with 5*l.* 5*s.* added by the President, was awarded to Mr. T. Denton Brooks, he having submitted the best set of drawings. Before the meeting concluded, Mr. Hobson proposed a vote of thanks to the retiring President for the very able manner in which he had fulfilled his duties during the past two years. Mr. Beevers seconded the proposition, which was supported by Mr. Hall. The President suitably replied.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Town Hall, Westminster, on Monday evening last, Mr. Joseph William Wilson, jun., President, in the chair, a paper was read by Mr. Samuel Herbert Cox, on "Dry Crushing Machinery."

THE LONDON COUNTY COUNCIL.

THE London County Council resumed its weekly meetings on Tuesday last, the Chairman, Lord Rosebery, presiding.

Tenders.—Tenders were received (*a*) for the erection of a fire-brigade station at East Dulwich, (*b*) for repairs and alterations to the gas-meter testing station at Spitalfields, (*c*) for the erection of a gymnasium at Battersea-park, and (*d*) for the erection of a gymnasium and three bathing shelters at Victoria-park. (The lists are given on another page, under the heading "Tenders.")

The Limit of Height of Buildings, whether on old or new Foundations.—The Public Health and Housing Committee's report on this subject (published in the *Builder* for April 16) was again on the *agenda*, but it was ruled out of order, as not being within the terms of reference of the Committee.

The Shaftesbury Memorial Fountain, Piccadilly-circus.—The report of the Improvements Committee contained the following paragraph in reference to the fountain which is to be erected on one of the "islands" at Piccadilly-circus.

"On January 14, 1890, the Council assented to the appropriation, for the purpose of the Shaftesbury Memorial Fountain, of the remaining vacant space at Piccadilly-circus. Since that date the sculptor, Mr. Alfred Gilbert, has been engaged upon the work, and we are now informed that the fountain is almost ready to be placed *in situ*. It therefore becomes necessary for the Council to consider the question of (1) connecting the water-pipes with the fountain, (2) forming the foundations for the memorial, and (3) building the enclosing wall or balustrade in compliance with the provisions of the Metropolitan Improvements Act, 1889. We have ascertained that the cost of connecting the pipes with the water main in the subway in Piccadilly-circus will be about 80*l.*, and of forming the foundations and building the balustrade about 930*l.* It is possible that this estimate will be considerably reduced. We reminded the Memorial Committee that it would be necessary for this work to be done; and that Committee has expressed its regret at its inability, owing to lack of funds, to undertake the work, and has asked the Council to do it. We freely admit that this is by no means an unreasonable request, having regard to the fact that if the site were not appropriated to the Shaftesbury Memorial Fountain, the obligation under the Act of laying out the piece of ground as an ornamental enclosure and of building the enclosing wall would rest entirely upon the Council. We are confident that the refusal of the Council to incur this expenditure would preclude the Memorial Committee from placing the fountain upon the site, and the double opportunity of providing for a much-needed ornamentation of Piccadilly-circus, and for a perpetuation of the memory of the public man after whom the Avenue was named, would be irretrievably lost. We may add that the Highways Committee has given its consent to the connexion of the pipes with the water main in the subway at the Circus. We recommend:—

'That, subject to an estimate being submitted to the Council by the Finance Committee, as required by the statute, the Council do authorise us to provide for the connexion of the necessary water pipes with the fountain and the formation of the foundations upon which the memorial will be placed, and the building of the balustrade around it.'"

The recommendation was agreed to without discussion.

Rosebery-avenue.—The Improvements Committee also reported as follows as to a proposal for the extension of Rosebery-avenue to Essex-road, Islington:—

"We have had before us a letter from the Vestry of Islington, suggesting that the Council should undertake the continuation of Rosebery-avenue along Owen's-row and Colebrooke-row into Essex-road. The Vestry states that such a thoroughfare as that proposed would afford considerable relief to the congested traffic at the 'Angel,' and that the advantages to be derived from the formation of the new street would be very great. We have asked the Vestry whether, in the event of the Council agreeing to undertake the work, it would be prepared to contribute towards the cost, but the Vestry states that in its opinion the new street would be a County improvement, and that the cost should be defrayed by the Council. Having regard to the unwillingness of the Vestry to contribute towards the cost, we are not prepared to advise the Council to carry out the proposed improvement. We therefore recommend,—

'That the suggestion that Rosebery-avenue should be continued to Essex-road be not at present entertained by the Council.'"

The Council concurred in this recommendation.

The other reports were disposed of by five minutes past four,—that is to say, all the reports had been gone through in an hour and five minutes, an event unprecedented in the history of the Council, as the Chairman remarked. But the sitting was by no means over. The *agenda* paper was full of "notices of motion." Some of these were withdrawn, but the others were not all disposed of when the Council adjourned at seven o'clock. The only one we need notice is that concerning

The "Fair Wages and Hours" Clause,—as to which Mr. Leon moved:—

"(*a*) That in future the 'fair wages and hours' clause be inserted in the contracts made with contractors instead of as heretofore being only put into the tender form, and that a penalty be imposed on breach.

(*b*) That 'fair wages' shall mean such rates of wages, and 'fair hours' such hours as have been agreed upon in each occupation between employers and the London Trades Unions concerned."

Mr. John Burns moved, as an amendment:—

"That all the contractors be compelled to sign a declaration that they pay the trade union rate of wages, and observe the hours of labour and conditions recognised by the London trade unions, and that the hours and wages be inserted in and form part of the contract by way of schedule, and that penalties be enforced for any breach of agreement."

Mr. Goodman seconded the amendment, and after considerable discussion the debate was adjourned.

THE INSTITUTE OF BUILDERS:

ANNUAL DINNER.

THE annual dinner of the Institute of Builders was held in the Egyptian Saloon of "The Monico," Piccadilly-circus, W., on Tuesday evening last, the President, Mr. Herbert Henry Bartlett, in the chair.

The President proposed the toasts of "The Queen," "The Prince and Princess of Wales and the other members of the Royal Family," and "The Navy, Army, and Auxiliary Forces." Colonel Trollope, in responding to the last toast, said he very much regretted the absence that evening of Colonel Stanley Bird, who had caught a chill and was unable to be present.

Mr. H. T. Ashby proposed the toast of "The Houses of Parliament," coupled with the name of Major L. H. Isaacs, M.P., who, in reply, said the next Parliament would have some very difficult subjects to deal with, which would concern the general community, and particularly contractors and builders. One of the most important questions which would have to be disposed of was that of the proper relations between capital and labour, and in regard to that question there was certain to be a big fight. Up to the present time capital had been able to assert its claims, and labour had been compelled to relinquish some of the absurd demands which it had made. A short time ago a strike of the carpenters had to be endured by the masters, and he now understood that at no very distant date they would have to face another strike on the part of the bricklayers. It was quite clear that strikes could not go on in that piecemeal fashion, and that there must be a genuine attempt on the part of all concerned to bring those strikes to something like an end.

The President, in proposing the toast of "The Institute of Builders," said although they were not all members of the trade, he thought they must all take an interest in the calling, as it was one which affected them all. The tastes and requirements of man had so developed, and his ideas of a perfect habitation had become so complex, that a large number of different branches of the trade had been called into existence. We could not do without our houses, and it was important to us that those houses should be properly constructed. And as it seemed to be a modern idea that everybody should belong to a society, not for the purpose of self-glorification, but for aid, and for the benefit of their class, it came to pass that the builders formed a society. That society had grown and had become an Institute, and had found it necessary to obtain a charter; and now it was in a position to meet on equal terms with other corporate bodies. The ramifications of the building trade were so extensive that a surprisingly large proportion of the legislation proposed, in one way or another affected their interests, and the self-sacrifice of those gentlemen who gave their time on behalf of the Institute was deserving of all honour. There were committees and sub-committees in connexion with the Institute, and the matters which were dealt with affecting the trade were very many. The President next referred to the Parliamentary work of one session, and proceeded to say that it was necessary to thoroughly discuss any proposed legislation, for they did not know how a little word, insidiously slipped into an Act, might affect their interests. They had in connexion with the Institute a library, and although he did not like to appear to be begging, he was sure the Library Committee would be glad to receive any volumes which gentlemen could give. Under the able President who preceded him, they had had a series of winter lectures which had been given with a view to the discussion of important subjects in connexion with the trade, and he hoped that those lectures would be started again. The building trade gave employment to more men than any other trade in the country, and it had been found necessary to keep abreast of what was going on. When they were beset on all hands by labour agitators, by curtailments of power, by constantly-increasing Parliamentary requirements, and the continual encroachments that labour was making upon capital,—and to his mind, notwithstanding the way in which some of the labour leaders regarded it, capital was the very staff of labour,—they felt that a body ought to exist which should adequately represent the important interests of their trade, and which should be so much in the trust and confidence of its members that it should at all times speak with authority and power.

Mr. Thomas F. Rider, President of the Central Association of Master Builders of London, then proposed the toast of "The Architects and Surveyors," coupled with the names of Mr. Thomas Blashill and Mr. T. F. Franklin.

Mr. Blashill, in responding for the architects, said that some portion of his professional career had been devoted to matters of arbitration, and he had always thought that there were two ways of dealing with differences: either to make those differences worse, or to lessen them, so that the end might be agreement. He was sure that all those present that evening hoped and wished to agree. The building trade might always rely upon the sympathy of the architectural profession, and he was very confident that those present would do what was right and proper in reference to the questions which were agitating their minds.

Mr. T. F. Franklin having responded for the surveyors, Sir John Colomb, M.P., proposed the toast of "The President," who replied.

The last toast, that of "The Visitors," was then proposed by Mr. J. Mowlem Burt, coupled with the name of Mr. W. H. Strudwick, who briefly replied.

Amongst the gentlemen present (besides those already named) were Messrs. F. J. Dove, H. A. Hunt, J. Norton, Joseph Randall, W. E. Stoner, Thos. Gregory, Wm. Brass, H. Gough, E. S. Henshaw, H. I. Sanders, Woodman Hill, Richard S. Henshaw, J. Hill, Basil Peto, T. M. Rickman, L. J. Maton, Frank May, J. Howard Colls, and R. Neill, jun.

COMPETITIONS.

THE GLASGOW FINE-ART GALLERIES DESIGNS.—The five designers whose plans were rejected in the final competition for the new art galleries, concert-hall, and museum at Kelvingrove, have lodged, through Dr. David Murray, of Messrs. Maclay, Murray, & Spens, an objection to the design which was accepted by the Executive Committee of the Association for the Promotion of Art and Music in Glasgow. The ground of the objection is that Messrs. Simpson & Allen's design does not conform to the conditions which were laid down for competing architects by the Committee. In these conditions it was stated that the central hall was to contain a minimum of 10,000 square feet, and the objectors allege that, according to the figured dimensions on the accepted design, it only contains 7,312 ft. 6 in. The difference is made up by including in the central hall what, it is maintained, are vestibules or corridors. In the final instructions to competitors, one of the clauses stated—"The central hall is not intended so much for vocal concerts as for instrumental music, and the better music is heard in the courts of the museum and the picture-galleries, corridors, and staircases surrounding the hall, the more nearly will the building meet the object of the promoters." It was also laid down that the central hall and the corridors and approaches were to be dis-

tinguished in the plans by different colouring. On these conditions the objectors base their allegation that the successful designers have included in their measurements of the central hall floorage which is not a part of it. The committee have forwarded the objection to Mr. Alfred Waterhouse, R.A., who acted as their assessor. The Glasgow Institute of Architects have also the matter under consideration.—*Glasgow Herald.*

NEW FREE CHURCH, AYR.—St. Andrew's Free Church congregation, Ayr, recently invited a number of architects to furnish designs for a new church to be erected on a site on Bellevue estate, near to Park Circus East. Seven sets of designs were sent in, and were submitted to the adjudication of Mr. Hippolyte J. Blanc, A.R.S.A., Edinburgh, who recommended the adoption of design "B," and which recommendation the deacons' court endorsed. The author of that design is Mr. John B. Wilson, Glasgow. The style of the building is modern Gothic. The form of plan suggested is that of a nave with two wide side aisles, the accommodation in the area being for 492, and in the gallery over each aisle and at the end of the nave, further accommodation for 268 is found. There is to be a spire, which will rise to the height of 146 ft. The cost of the building, without reckoning the spire, will be about 4,000*l.*

SCHOOLS, WOOLPIT, NEAR STOWMARKET.—In a competition among four selected architects for new schools for the School Board of Woolpit, near Stowmarket, the design submitted by Mr. Frank Whitmore, architect, Chelmsford, has been accepted by the Board.

LAYING-OUT NEW PARK AT NEWPORT (MON.)—Twenty-five sets of plans for this work have been sent in. The first premium of 50*l.* has been awarded to Mr. Mawson, landscape gardener, Windermere, the cost of carrying out his scheme being estimated at 10,761*l.*

Illustrations.

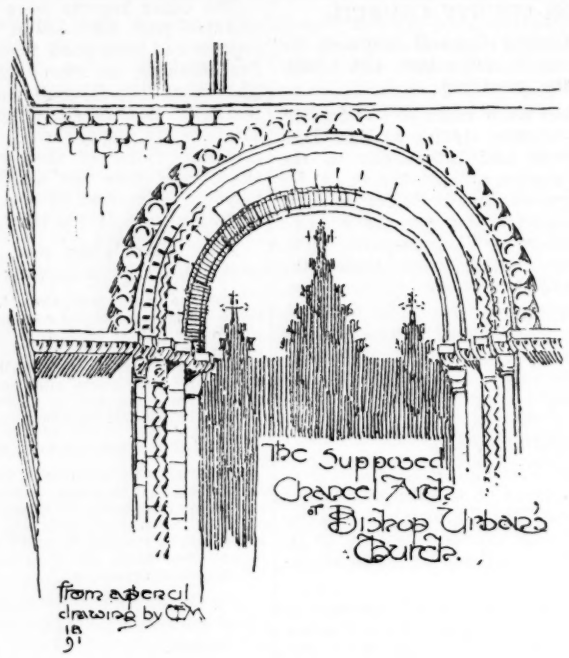
LLANDAFF CATHEDRAL.*

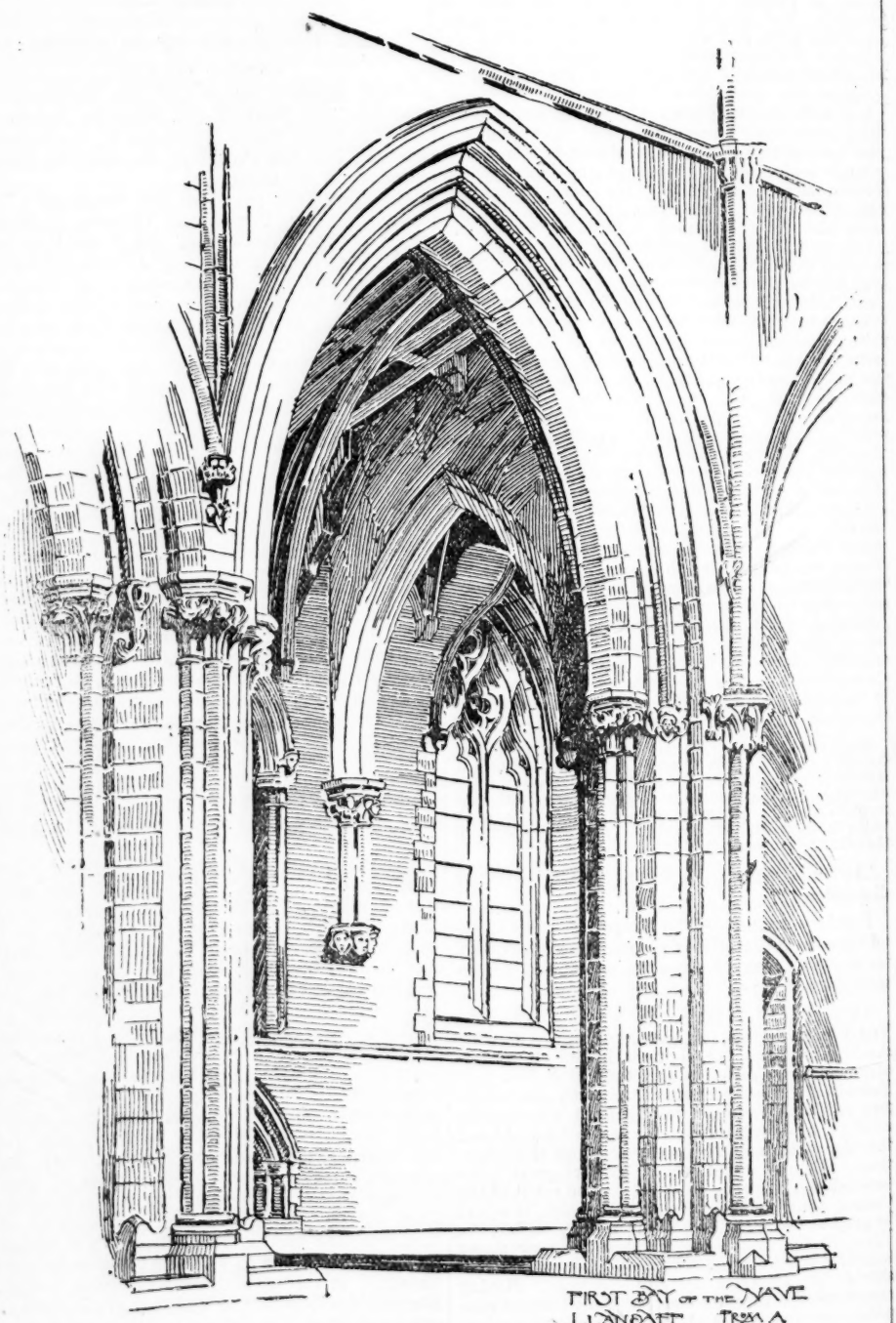
ON the difference in the sites of English and Welsh cathedrals, Professor Freeman says:—"Founders of Welsh cathedrals, unlike their English contemporaries, seemed to seek their dwellings in remote places rather for retired contemplation than for any active government of the Church, in sites suited rather for Cistercian abbeys than for cathedral churches." The English sees in several instances were removed to cities of greater importance, whilst the Welsh remain where they were originally founded to this day. There is no reason to believe that the cities of St. David's and Llandaff were at any time of greater importance than at present in a military or commercial sense, though the ecclesiastical population both in proportion and in actual numbers has no doubt declined. Some remains of the original clergy houses can still be seen, either in foundations or in walls, or built into modern work.

The situation of the Cathedral is one of great beauty, and in a way unique. It is surrounded on the south and west sides by wooded hills, and elsewhere by pleasant fields and meadows, which give to the Cathedral a character more distinctly rural than any other in the country. In this respect it differs from most of its English fellows, for whilst they, as a rule, are the centre and nucleus around which a busy city has grown, here at Llandaff, the "City" is little more than a village, consisting mainly of the ruined Bishop's Palace, the Deanery, and the Clergy-houses, and a few untidy, deserted-looking streets, all of which are to the south and west of the Cathedral, and high on a hill above it. From this hill a steep and picturesque lane, shaded with trees, leads down to the west front, and past it to meadows bounded by the river Taff, from which the city takes its name.

Taking Llandaff as a whole, there is little in its external appearance, except its beautiful west front, that is suggestive of a cathedral. In the absence of any central feature, such as a tower or lantern, or of transepts, or of collegiate buildings (for the ruined Bishop's palace has no connexion with the Cathedral, and might, indeed, be the ruins of a castle, so little is there to mark its original purpose), the whole fabric might well be taken at first sight, externally at least, for an enormous parish church.

The feature which is immediately noticed by a student of architecture, and which gives this Cathedral its unique character, is the long and, except at one point, unbroken plan, comprising the nave, choir, and presbytery under one roof.





* This series of illustrations of the Cathedrals of England and Wales was begun in our issue of January 3, 1891. A list of those already illustrated, with particulars of future arrangements, will be found on page 368.

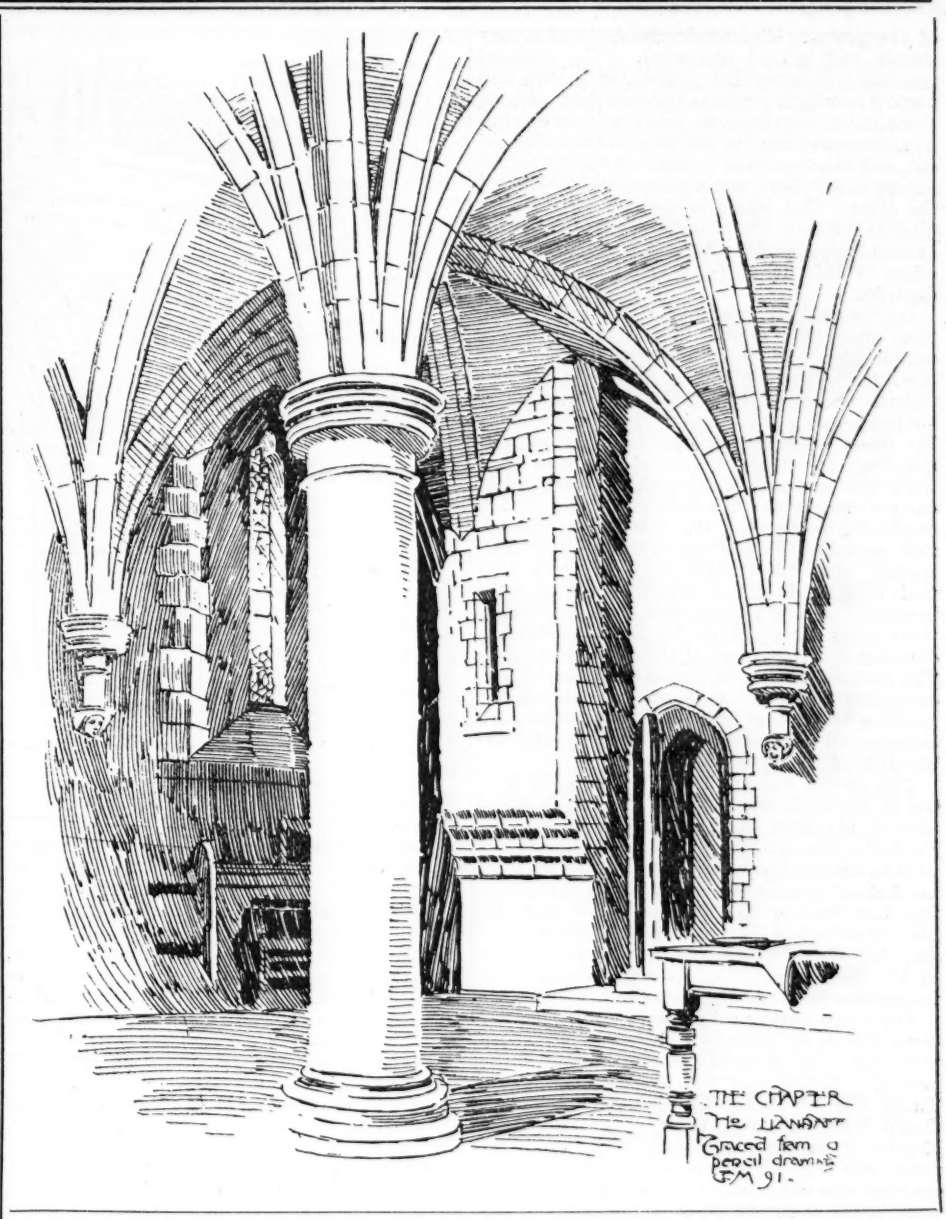
The Lady-chapel projects at the east end at a lower level. The aisles extend the whole length of the church, and include one bay of the Lady-chapel. The one break in this line is the Chapter-house, which projects on the south side from the second bay westward of the presbytery aisle; on the plan it is a little suggestive of a transept. Another most strongly-marked characteristic is the absence, before mentioned, of any transepts or central tower. "In this respect," Professor Freeman says, "it is unique amongst Cathedrals of South Britain, and has but few parallels amongst churches of equal size, even when not designed as episcopal sees, as the present Cathedral of Manchester, Dorchester Abbey, and the churches of Boston, in Lincolnshire, and of S. Michael's, at Coventry."

In Llandaff, again, there is but the difference of detail between the nave and choir, viz,, in the plan of the piers, in the arch mouldings, and in the treatment of the shafts dividing the bays; and the only difference externally between the latter and the presbytery is in the arrangement of the clearstory. Hence the external appearance loses a great deal in effect, the long line of roof unbroken, except where the Chapter-house occurs, and the general plainness and flatness of the treatment is very unsatisfactory, and must have been still more so in its original state, for the addition of the buttresses in the recent restoration helps to a great extent to relieve what would otherwise be the general monotony.

The ecclesiastical foundation of the See is said to be the oldest now existing in Great Britain still remaining upon its original site; but, although there is plenty of evidence to show what the original building was like (for a minute description of it appears in "Liber Landavensis"), no stone of an earlier building than that founded by Bishop Urban in 1120 now remains. The original Saxon church was most likely entirely destroyed to make room for its Norman successor, the principal remains of which are the large Early Norman arch behind the high altar, and which is one of the most effective features of the interior, and a portion of a window and wall on the south side of the presbytery, part of which has been cut away in a very curious manner by the Decorated arcade.

The large Norman arch was, doubtless, the chancel arch of Bishop Urban's church, and his nave stood where the presbytery now is, whilst the site of his choir is now occupied by the present Lady-chapel. Judging from this, the original Norman church must have been a very small one, although, as the remains indicate, of a somewhat elaborate character. There is a theory that these remains are but a portion of a much larger church extending as far as the present west front, but the later work in the porches at the western end is much too advanced in detail to admit of the idea that they formed any portion of Urban's work; the latter is more likely to have consisted of only nave and choir without central tower or transepts, as no signs of these having existed eastward of the present Presbytery remain. Some foundations have, indeed, been found on the north side near the presbytery aisle, but what they originally formed is only very conjectural. There are more definite indications, however, on the south wall of the present presbytery, which seem to point to the fact that a Norman tower of an irregular polygon shape existed over the present Early English vaulted bay into the Chapter-house; the core of the walls of this bay is evidently Norman, although the facing is Transitional. The walls here are very thick, and seem by their strength to have been built for a tower. The extent of Urban's church may have been one bay westward of this part.

Bishop Urban died in 1133, and there seems to have been an interval of about fifty or sixty years before building operation were again commenced. The external walls of the nave and choir, including the two Norman doorways, are attributed to Bishop Henry, of Abergavenny, who held the See from 1193 to 1218, the nave and choir and the vaulted bay to the Chapter-house being built during the latter years of his rule, and that of his successor William Prior, of Gouldcliff, whose death is recorded in 1229. The work carried out by these prelates is by far the most beautiful and interesting in the whole building, and well repays careful study. The detail is especially good and pure of its date, and is marked everywhere with great individuality, notably in the arch-molds and



the manner in which these die upon the piers at the springing. The accompanying sketch illustrates this, and also the difference in the detail between the nave and choir before mentioned. The sketch shows the first bay of the nave with the last choir pier and the first pier of the nave.

As already observed, the chief beauty and the most attractive portion of the Cathedral is to be found in the west front. It was built at a time when the Early English style was at its best, and is entirely free (with the exception, perhaps, of the porch) from the slight Romanesque feeling which still lingers in the details of the nave and choir.

It is interesting to compare this front with that of Saint Remi at Rheims; the similarity of the treatment is very evident, the proportion and grouping of the windows in the middle stage is almost identical, and appears to suggest that the architect at Llandaff and Saint Remi was one and the same man.

The interior design of this portion, both in detail, arrangement, and proportion, is admirable; it gains a great deal in dignity by the difference in height between the level of the nave floor and of the ground outside, there being a fall of several feet at this point. The additional height thus gained is given to the stage occupied by the three great central lights, whose internal cill reaches nearly to the tympanum of the semi-circular doorway outside, the loss of proportion to the lower internal stage being made up by the depth below the external ground line. The manner in which the different proportions of the exterior, and interior, necessitated by the two levels, are managed so as to give effect of dignity and good proportion to each, is very ingenious, and deserves close attention.

From the fact that traces of the springing of arches exist in the eastern bay of the aisle on each side of the choir, Professor Freeman believes that they were originally the western arches of a pair of towers, the position of which would have been similar to those at Exeter, except that at the latter they are separated by the aisles from the church itself, whilst here they would have been built over them. If these towers ever existed, the Early English church would have consisted of two steeples flanking the choir, with two larger ones at the west front. This would have contributed a great deal to break up the general monotony of the design. Soon after the nave and choir were completed the Chapter-house was added by Bishop William de Burgh, chaplain to Henry III. (consecrated 1244, and died 1253), and probably completed by William de Radnor, 1256-1265. It is transitional from Early English to Decorated in style, clearly later than the nave and choir, having deeply-recessed lancet windows, with foliated heads. The plan is very unusual,—if not unique,—amongst Chapter-houses, for where they are usually either rectangular or polygonal in plan, here it is square and vaulted, in four compartments, with a plain central pillar. It has an octagonal upper story, finished with a high pyramidal roof.

During this time Urban's nave and choir existed, but on the completion of the Chapter-house his choir was removed, to make room for the next and last addition,—the Lady-chapel,—which was built about the latter half of the thirteenth century, and consequently is Early Geometrical in date. It was founded by Bishop de Breos, who was Bishop of Llandaff from 1265 to 1287, and whose tomb is in the Lady-chapel on the north side of the altar. This part of the Cathedral is fortunate in being to-day in practically the same condition as that in which its founder left it. It is a very good example of the period to which it belongs; but, by reason of its tall and narrow proportions, is in strong contrast to the rest of the work, and somewhat out of harmony with it. It is vaulted in stone of five bays, with Purbeck marble vaulting shafts, and has some good carved bosses at the intersection

of the groins. The whole detail is of a very simple and refined character. The external treatment is somewhat plainer, with long and narrow two-light windows between the buttresss, these latter have three stages; the lower one has a gablet or pediment at the height of the window-sill, and the upper one carried up to and terminating in the deep stone parapet which finishes the sides. The whole is covered with a low-pitched modern roof, considerably spoiling the external appearance. But, taken generally, the effect of this delightful building is quiet and dignified.

On the completion of the Lady-chapel, a complete repair and remodelling of the aisles was undertaken. It was apparently from one uniform design throughout, and originated at the east end of the aisles, the work there being contemporary with that of the Lady-chapel. In some parts the original walls were left standing, in others completely reconstructed from the ground. This work was so slowly carried out that it extended through the remaining portion of the thirteenth century, and probably through the whole of the fourteenth, when the present aisle windows, with their ogee heads and reticulated tracery, were inserted. It was at this time that all indications were destroyed, so far as the aisles are concerned, of the bases of the supposed towers. The earliest portion of Decorated date is that comprising the two bays of the aisle on the north side of the presbytery, and the work commenced but never completed in the rebuilding of Bishop Urban's nave.

Two arches were finished on the north side, but on the south the eastern one only; the next arch on this side was just started, leaving the head of a Norman arch and the commencement of the next one above, the latter cutting into the head of a Norman window just above the springing, and leaving the western jamb and the greater portion of the arch intact. This peculiar stopping of the Decorated work, and the mixture of the Norman with it, forms one of the most interesting points in the Cathedral.

The north-west or "Jasper Tudor" tower and some tracery in the eastern windows of the aisles were the only additions of the Perpendicular period. The former was erected by Jasper Tudor, Earl of Pembroke, afterwards Duke of Bedford, and uncle of Henry VII. The Early English tower, contemporary with the west front, was probably destroyed at this time, but much of the old work in the lower portion was used in the re-construction of the new Perpendicular tower, and the latter still rests upon the original walls on the east and south sides.

The building of this tower was the last event in the architectural history of the Cathedral, until the first of those changes occurred which ended in the shameful state of neglect and decay in which Deans Bruce Knight and Conybeare found it, and from which they were the means of bringing it to the present,—on the whole,—satisfactory condition.

Few cathedrals have suffered more since Reformation days than Llandaff, for its history from that time until about thirty years ago is one of gradual ruin, spoliation, and decay. It was in such a dilapidated and unsafe condition in the year 1718 that the removal of the see to Cardiff was for some time seriously entertained. Storms, literal and figurative, have waged around its walls, playing havoc with its beauty, terminating in that of November 27, 1703, which destroyed the upper part of the north-west tower and a large portion of the nave. It was then left practically to the mercy of the weather for years, and in a pitiable state of decay, the walls of the nave and aisles were ivy-grown, and grass grew on the nave floor, whilst the aisles themselves were roofless.

A worse misfortune, however, awaited the Cathedral when it fell into the hands of Wood, the well-known Bath architect, about the middle of last century. A sum of about £7,000 was spent in converting the presbytery and the four eastern bays of the nave into what has been aptly compared to a Bath pump-room, but what was said by the architect to be a reproduction of an Italian temple. This incongruity existed for nearly one hundred years, until the movement for the complete restoration of the Cathedral commenced, as just mentioned, under Dean Bruce Knight in 1843; this restoration included the rebuilding of the presbytery, choir, and nave, and the external completion of the Chapter-house.

One or two other points of interest remain to be noticed; of these, the principal is the ruined Bishop's palace, which stands on the top of the

hill on the south-east side of the Cathedral. It was, apparently, mainly of the Decorated style, and very strongly fortified, and, as the remains indicate, had more the character of a castle than a palace,—indeed, it is commonly mistaken for the former. The greater portion, —nearly the whole,—was destroyed by fire in his wars against Henry IV. by Owen Glendower, who is responsible for the loss of many of the architectural beauties of Llandaff and elsewhere in the county. The old gateway, which forms such a picturesque adjunct to the Cathedral, and some ruined walls, are all he left standing of this, at one time, stately palace.

At no period in the history of the Cathedral does there appear to have been any cloisters, and there are but few stones left of its collegiate buildings. The principal of the latter class was the Archidiaconal Castle, said to have been of great magnificence. This was also destroyed at the same time as the Bishop's Palace, and by Owen Glendower. This castle formerly stood on the north-west side of the church opposite Jasper Tudor's Tower. In Browne Willis's time (the first half of last century), there was also standing to the north-east of the castle a prebendary and a treasury house, but both in very bad repair, and soon to be pulled down; and exactly east of the Cathedral, outside the graveyard, there was formerly standing a small college for the Vicars choral.

Llandaff once possessed a famous campanile, which stood about 120 yards south-west of the west front. There were but few such towers in the country, others being at Evesham, Chichester, and Salisbury; the latter, however, was destroyed by Wyatt in the beginning of this century.

Judging from an old description of the tower at Llandaff, which appears in "Liber Landanvensis," it was evidently of considerable size and fine design. The ground plan measured 42 ft. square, and the doorway,—that is, the wooden door itself,—was 13 ft. high and 7 ft. broad. The famous "Great Peter" bell of Exeter formerly hung here, but was taken down in tho fifteenth century by Jasper Tudor, and exchanged to Bishop Courtenay, of Exeter, for five smaller bells.

Another interesting relic of the Cathedral as it existed before the visitation of Wood is the painting on wood from the back of the Bishop's throne, which formed part of the Decorated choirs-talls, these latter, according to Browne Willis, were very refined in detail, and of an elaborate character. The painting represents the assumption of the Virgin Mary with seven attendant angels.

At the top of the picture on either side is an angel playing on an instrument of music, probably intended to mark her welcome into heaven. At the foot, on the left side, is an angel holding an escutcheon, on which are painted the arms of the Bishop and See, and on the right a full length portait of the Bishop himself, having a scroll coming from his mouth, on which is written the hexamter line:—

O Virgo scandens sis
Marshall cœliea pandens.

The history of this painting is very curious; during the Rebellion it narrowly escaped destruction, and was partly defaced by being covered with lamp-black. It was taken from its position during the alterations of last century, and built in the wall over Wood's Classic portico, where it was discovered by some workmen during subsequent alterations. It was then carefully cleaned and repaired, and is now on the staircase of the palace of the present Bishop. The Decorated altar-screen, which was removed to make way for the present modern one, is an excellent example of the work of that date; it was erected by Bishop Marshall, and is contemporary with the choir-stalls just mentioned. It now stands in the east end of the north presbytery aisle.

Llandaff Cathedral does not possess many monuments or tombs, although there are some deserving notice. Of these one is Decorated in style, and is on the north side of the Lady-chapel, and in the second bay from the west-end. It is of alabaster, and has nine canopied niches on each side, each containing a small figure of a saint; the whole tomb is in an unusually complete state of preservation. The tomb of Saint Teilo (whose statue is in the vesica of the tympanum of the west doorway) is interesting locally as being the tomb before which it was formerly the custom for people making purchases of land, &c., to swear to their bargains. Two curious tombs are those of Lady Audley, who is in a long robe and close muffler, with two monks bearing escutcheons at her feet, and of an emaciated figure in a winding sheet, who fell a victim to disappointed love in the fifteenth century. C. E. M.

CARTOONS FOR STAINED-GLASS WINDOWS, EUSTON CHURCH.

THESE lithographs are reproduced from cartoons made by Mr. H. Ellis Wooldridge for windows which are now being executed by Messrs. Powell, for Euston Church.

The design is entirely executed in brown and stain on white glass, leaded in squares of equal size. The subject, as will be seen, is the visit of the three Maries to the sepulchre of Christ, on the morning of the Resurrection.

MONUMENT TO THE LATE MRS. ROWLEY, ST. NEOTS.

THIS monument, in the form of a canopied altar tomb, is now being carried out from the

designs of Mr. Frederick A. Walters, F.S.A., by Mr. Thos. Earp, of Lambeth, and will, on completion, be erected on the south side of the interior of the chancel of the Parish Church of St. Neots, Hunts, of which the deceased lady's living representative is the lay rector. The position chosen is west of the sedilia and outside the altar rails. The effigy in white alabaster is habited in an heraldic mantle over the other garments worn, and rests on a moulded slab of dark Derbyshire fossil marble, of which material is also the step or plinth on which the monument stands. The whole of the rest of the work is executed in Beer stone. Above the large arch supporting the canopy are floating angels bearing the family shields of the lady and her husband, while at her head, in the recess, is her own lozenge-shaped shield as a widow. The five niches surmounting the canopy contain figures of Our Lord in Majesty attended by angels. The rose and lily are, by special desire, largely introduced in the carving, and for the same reason the heart, emblematic of charity, over the main arch of canopy.

Correspondence.

To the Editor of THE BUILDER.

THE STEEPLE OF ST. ANTHOLIN'S.

SIR,—Referring to your "Note" in last week's number as to the former Church of St. Antholin, Watling-street, I may inform you that the spire was undoubtedly the work of Wren.

About sixty years ago the upper part was found to be dangerous, and it was rebuilt by John Griffith; but my father, who resided in the parish in 1823, informed me that it was reduced in height, I think, about 15 ft. The capital which formed the apex was, I believe, removed to a garden somewhere in the suburbs.

In the bas-relief on the Memorial in Size-lane, I have endeavoured as nearly as possible to produce the original proportions of the spire. It may be interesting to remark that, in consequence of an irregularity in a notice calling a Vestry meeting, my father and I were enabled to rescind a resolution to remove the tower as well as the church; and matters went so far as to excavate the inside of the tower, and reinter some of the human remains housed in the church, which were placed in specially-made boxes. But a parishioner, feeling that the site of the church would realise a much larger sum if the tower was removed, obtained an order in Council, and great astonishment was expressed both in the parish and outside when such order was signed. A deputation waited on the Ecclesiastical Commissioners, I think I may say *headed* by the former respected Editor of the *Builder* (Mr. George Godwin), who took great interest in the matter, to endeavour to get the order rescinded, but we were told it was impossible. The remains were, therefore, removed from the tower to the City of London Cemetery at Ilford, and the tower demolished.

I may say authoritatively that no doubt was ever expressed as to the spire being Wren's work.

The church as well as the spire was very interesting, on account of the elliptical dome set on an irregular octagon occasioned by the angle of the street.

If any of your readers take any interest in the matter, I shall be pleased to show them the drawings taken before the church was removed.

J. DOUGLASS MATHEWS.

11, *Dowgate-hill, E.C.*
May 4, 1892.

ARCHITECTURAL EDUCATION.

SIR,—Since writing the letter which you kindly printed in your last issue, I have received the accompanying communication from Mr. Jackson, which, as it clears up a confused point in the correspondence under the above heading, I venture to hope you will kindly publish. I also send you the conclusion the informal meeting, held in my rooms on March 15, arrived at on the principal point then under consideration, as this is referred to in Mr. Jackson's letter. I hope these documents may satisfy Mr. Adams and those of your readers who have been able to follow this correspondence.

LEONARD STOKES.

7, *Storey's-gate, S.W.*, May 3, 1892.

"DEAR MR. STOKES,—I am sorry to hear from you that my letter which was published in the *Notes* of the Architectural Association has been understood in a sense that I certainly never intended it to bear.

Nothing was farther from my thoughts than to suggest you should make a clean sweep of your whole scheme and draw up a new one from the very beginning. The greater part of your plan seems to me excellent, though no doubt in some details you yourselves might admit it capable of improvement. For instance, I thought it attempted rather too much in including certain branches of study, of which only a smattering could have been obtained within the limits of your course, and which I thought might therefore be left out till more essential things had been mastered. These are mere matters of minor detail.

The only thing of which I should like to see you make a 'clean sweep' is the pointed *reference* in your *Brown Book* and curriculum to the Examinations of the Institute.

Believing as I do, and as all those with whom I am in sympathy believe,—yourself I am happy to think among them,—that the Student who works to *pass* and not to *know* is working in the wrong way, and with the wrong motive, and will never in that way qualify himself for an architect, I cannot feel any sympathy with an educational plan which contemplates examination as its goal.

When we met at your rooms we drew up and agreed to certain points.* My letter was not intended to do more than reinforce what we then agreed to.

I wish I had heard of the need of an explanation in time for publication in your journal (*A. A. Notes*), but I shall be glad if you will make this letter public among the members of the A. A., or in any other quarter that you may think proper.

In conclusion, I must express my regret, not unmixed with surprise, that some of your members should imagine I had ventured in any way to attack the independence of the Architectural Association, or, as one writer in your *Notes* puts it, to 'dictate your future course of procedure.' I cannot see how such an interpretation can be put on anything I have said or done. I was asked by you and others whether I would help your educational scheme, and I naturally replied that I could not join in it so long as it pointed towards examination, which I consider a misfortune. Surely this is not dictation. The Association is at perfect liberty to go its own way without any regard to me or my opinions; but when I was invited,—it matters not whether formally or informally,—to say on what understanding I would join you, I could not do otherwise than state my own views for what they were worth, and explain the conditions on which I should be glad to co-operate with you. I fail to see why this should, in Mr. Adams's words, have caused the Association 'surprise, astonishment, and indignation.' I may surely claim for myself that independence which the Association very properly values in its own case.—Yours very truly,

T. G. JACKSON.

14, *Buckingham-street, W.C.*, April 28, 1892."

SIR GILBERT SCOTT'S RESTORATIONS.

SIR,—Mr. Loftie, in his letter published in your issue for April 23, says that Sir Gilbert Scott "put forward a scheme for the *destruction* of the noble carved stalls" at Canterbury Cathedral. The stalls at the west end of the choir are of the time of Charles II., the canopies being profusely ornamented with wreaths of palm branches, swags, and cherubs, with the Royal arms in full relief over the doorway. These canopies Sir Gilbert Scott proposed to *remove* and place in the nave, in order to expose the rich stone screen, the work of Prior Henry de Estria, which is now completely hidden by them. This screen, the existence of which is known to few, resembles the side screens of the choir in general design, but is more elaborate in detail, having the spandrels of arches filled with richly-carved diaper work, also painted panels between the arched openings. The space between the cills of the arcade and the elbows of the stalls is filled with oak boarding and decorated, and the stalls of the prior and sub-prior have had canopies of stone. The original colouring of the screen is mostly in a perfect state of preservation, and agrees with traces of colouring still to be seen on the south choir screen at the back of one of the canopied monuments,—showing that this colouring was continued all round the choir. See illustration, p. 362.

Mr. Loftie remarks that at Gloucester Cathedral "nothing ancient that could be 'restored' away was left,"—a sweeping statement, leaving the erroneous impression that there is very little of the ancient work untouched.

Sir Gilbert Scott's work was chiefly confined to the choir, where he put new seats in front of the stalls, bringing back to their original places the ancient arcaded fronts and "shades;" he also removed the galleries.

The uninteresting modern screen at east end was taken down, and replaced with a reredos and side screens. The only work done externally was to the porch, which was in such a state of decay that repairs were absolutely necessary to prevent the features from utterly disappearing.

Mr. Loftie also says that Manchester Cathedral "escaped" from Sir Gilbert Scott, but he has overlooked the fact that the ancient choir-screen, which had been cast aside as a thing of no value, was replaced by Sir G. Scott in its original position, and had it not been for him this fine oak screen would probably have been destroyed before now.

JOHN MEDLAND.

SIR,—The two letters, one from Mr. Loftie and one from Mr. Arthur Baker, printed side by side in your columns of April 23, and which seem to have been called forth by my humble effort to defend Wren's Library at Lincoln, are amusing and instructive reading.

Mr. Loftie is such a champion on my side, that he has not even had time to be correct in his facts.

It is, however, but too true that most of the buildings to which he refers have, in one way or another, been murdered under the pretence of restoration. Galvanised corpses are left.

But—poor Mr. Baker—what can we say for him! He entirely misses the point, and is evidently living in the uttermost regions of outer darkness.

Curiously enough, the monstrosity erected, under the plea of restoring the south aisle, at Chester Cathedral, which Mr. Baker so much admires, was one of the pieces of gratuitously destructive restoration I had in my mind when I was mentioning Sir Gilbert as a man whose name must inevitably be classed—in time—with that of Wyatt.

At the same time, I speak of my old master, Sir Gilbert, with the highest esteem. In working so much destruction, he believed he was doing right. He spared neither time nor trouble. His ardent love for, and delight in, the buildings he was wrecking under the name of restoration, could not be exceeded. Had he lived in these days, I feel convinced that "repair," and not "restoration," would have been his watchword. A watchword which, it seems, Mr. Baker is quite unable to understand.

SOMERS CLARKE.

SIR,—It is scarcely correct to say "Worcester was the joint work of Sir Gilbert Scott and Mr. Perkins." Sir Gilbert was only called in to finish the choir and pave the nave. Perkins did the work of restoration; he saved the tower from the fate that befel Chichester, taking out and rebuilding two large piers. Perkins secured the stone vaulting that had been condemned as hopeless years before, and that narrowly escaped being substituted for wood.

Some of the mistakes that were made were not the fault of the architect, but of the authorities of the cathedral,—*e.g.*, the geometrical west window, which ought to have been curvilinear. I have seen Perkins's design for the window in that date of style, and a magnificent design it was; but he was overruled.

Perkins was a man of retiring disposition, and was consequently overlooked; yet clever he certainly was.

Blunders were made; but I think some of our important modern men would blunder more and worse, had they the work.

W. LUNN.

Malvern, April 27, 1892.

SIR,—I would not for a moment question Mr. Loftie's right to his own opinion, on matters of principle and taste, or of the artistic power of any artist whether he be dead or living; but I do feel at liberty to protest against an author who has gained a reputation as an historian, passing from history to romance without giving his readers fair notice, and especially so when the deviation is made at the expense of the memory of that good and great man under whose spell it was my privilege to remain for sixteen years.

During the sixteen years I not only had an opportunity of witnessing Mr. Loftie's animosity to Sir Gilbert Scott, but of judging of the inaccuracy of both his past and present accusations.

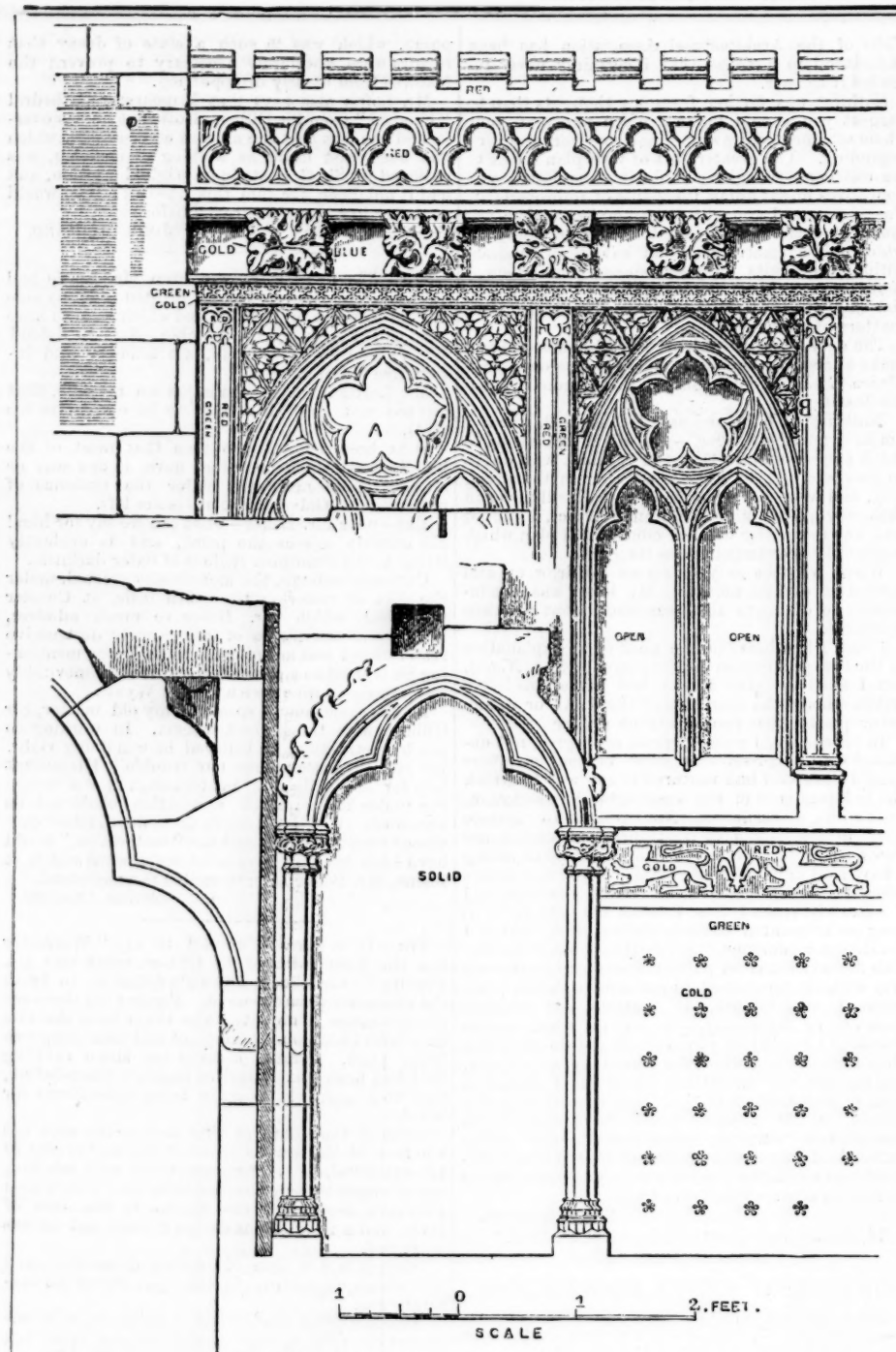
Their inaccuracy is of two degrees,—the mitigated and the unmitigated.

Of the latter class are the statements: First, as regards his sight, which, far from being imperfect, was particularly keen; his fondness for fine and delicate drawings, and his appreciation of the finest detail on buildings being proverbial.

Then, as to his work, Messrs. Slater & Carpenter's reredos, at Chichester, is put to his credit or rather discredit.

He is said to have "restored the wretched screen at Winchester," whereas, being so wretched as to be only fit for destruction, it was replaced by a screen designed by Sir Gilbert. The restoration of the west front of Lichfield Cathedral is entirely omitted, and Scott and Lord Grimthorpe at St. Albans, and Cottingham and Pearson at Rochester, are pitched in company into the anti-restorationists' Gehenna without one word of proof of the justice of their joint or separate committal. One comparison should be sufficient to show that the work of Scott and Lord Grimthorpe was of an utterly different nature. Scott brought up the western end of the south wall of the nave, which was so much out of the

* The following is the principal point referred to above:—That the instruction given by the lecturers and instructors in the studio should be directed solely to a thorough architectural training, without special reference to preparation for any examinations.—L. S.



A. Masonry painted to imitate carved compartments. B. Carved diaper, gilt, on pale blue ground.

The Ancient Choir Screen, Canterbury Cathedral; portion showing Stall and Remains of Canopy. (*See Mr. Medland's letter, page* 361).

perpendicular as to be in danger of falling, without the least interference with the old work, and thus preserved this magnificent specimen of Mediæval architecture which would otherwise have been totally destroyed; whereas Lord Grimthorpe pulled down Norman work, which was so strong that it required blasting, in order to carry out his own designs, and yet in the eyes of Mr. Loftie these are both "Vandalic operations."

To the former class I have ascribed the term mitigated, as I take the inaccuracies to lie rather in the meaning he intends to be attached to some of his terms rather than to the terms themselves. For instance, the word re-building which he frequently uses might, in ordinary parlance, refer to a partial re-erection of a building, or to an operation necessary to preserve a building, the old design and materials being reused, whereas Mr. Loftie uses it always as implying destruction of what was to supply something new and different.

"Scott rebuilt Chester, wholly destroying the exquisite charm of antiquity."

In this case "the exquisite charm of antiquity" was, unfortunately, caused by a decay of the facing of the walls, which, in the case of St. John's Church, Chester, where no restoration was attempted, caused the fall of the tower. And the "rebuilding" consisted of the absolutely necessary work of renewing the face of the walls with sound stone, every detail of the new work being made exactly after the pattern of the old. Mr. Loftie's statement infers that the removal of the old stones was unnecessary; but he says nothing either in support of this, or to show how he would have had the charm of antiquity preserved, or whether he would have allowed it to extinguish itself in its antiquity.

Again, the work at St. Asaph is spoken of as rebuilding, whereas the actual rebuilding was confined to only a portion of the wall and roof of the choir, which was a necessary work, and resulted in some archæological discoveries of great interest, the rest of the work being mainly the repairing and beautifying of the interior, and I may safely challenge any one who knew the cathedral before and after it fell into Sir Gilbert's hands to compare its present unfavourably with its past condition.

Again, at St. David's an unscrupulous use is made of the word rebuild. The rebuilding of the tower being only partial and confined to the piers, which were so rotten that the tower must have collapsed if Sir Gilbert Scott, with wonderful engineering skill, had not shored up the upper part of the tower and removed and rebuilt the piers one by one, and thus preserved the tower. And yet Mr. Loftie, though a professed lover of antiquity, allows his animosity to Sir Gilbert to transform this into an evil deed.

I regret that I have not time to deal with all the examples quoted by Mr. Loftie, but I think I have given fair specimens of the inaccuracy of his statements.

ARTHUR BAKER, F.R.I.B.A.

SIR,—I have just been shown in the *Builder* of the 22nd a letter from Mr. A. Baker, a former clerk of the Scotts. He says that in the early days of the restoration of this Cathedral I prevented Sir G. Scott from examining the closed and brick rebuilt west fronts of the porches, to find remains of the original ones, with a view to restoring them. It is impossible that he can be ignorant that the Committee, and on my motion, expressly authorised him (or possibly by that time Mr. J. O. Scott) to spend 100*l.* in that very investigation. The result was that they pulled down the whole of the two closed-up fronts, up to the top of the vaulting, and left the walls above supported on timber, which it would have cost twice as much to build up again if I had not restored the whole properly; and that they found nothing of any value. They did find some pretty bits of carving, which we did our best to keep as relics, but they gradually perished into dust.

Before that I one day found Longmire, the contractor for the defined works under the Committee, pulling something else to pieces. I asked him what for. He answered that Scott wanted to investigate something or other. Well, I said, I have no objection; but remember it has nothing to do with the contract, and we shall not pay for anything done without our order, as the contract says. And we heard no more of that, or any other such thing, until we had the application I have mentioned.

St. Albans, May 2, 1892. GRIMTHORPE.

THE GRISSELL MEDAL COMPETITION.

SIR,—In the *Builder* of April 16, I see that you publish the drawings which have won the Grissell Gold Medal for 1892. Will you kindly allow me space to criticise these drawings, and also to make a remark or two as regards the general conditions of the competition?

First, then, as regards the structure. The geological features of the cutting, over which the bridge is to be built, seem to have been ignored, and huge, unbeautiful (except perhaps to the contractor), and, to my mind, criminally wasteful abutments have been designed, where there was not the slightest need for any at all, nature having herself supplied rock sides to the cutting from which the arch should spring direct. I have roughly estimated the cost of the abutments as per drawing, and consider that they would require at least 5,500*l.* to prepare for and build. A "flying arch,"—so often met with on Brunel's railway works,—would have been all that was required: footings, of course, would have been needful if the rock was soft, and, perhaps, a pad of concrete beneath them. A much flatter curve, on the equilibriated principle, would have looked better, been safer, and saved in the sprandrel walls, although this latter would probably have been counterbalanced by the increase of span. Another point where I think Mr. Harlock has been guilty of waste is in the depth of his arch stones. The keystone of Cabin John Bridge, in America, with a span of 220 ft., is 4 ft. 2 in.; that of the Grosvenor Bridge at Chester (200 ft. span) is 4 ft. I think that both Molesworth and Trantwine would have been satisfied with 3 ft. 6 in. in the present case. If "architectural features" were sought by this excessive depth, I think they might have been gained another way, viz., by making the outside arch quoins *only* of greater depth, and feather-headed, both for appearance sake and also for getting some bond and level foundation for building the sprandrel walls from.

Now, secondly, as regards the general conditions of the competition. Would it not have been well to state that economy of design, within the limits of safety, would be a most essential feature, to be considered in making the award? If this is not done in future, of what use at all is a design for this class of work. I take it that the prize drawings should be such that they would be suitable for actual constructional purposes, and not merely made up of eyeable lines, pleasing colours, and "architectural effects" on paper. Railway work, as at present carried out, is done on the safest and cheapest possible lines. If ornamentation is needful, let it take a third place, safety and cheapness ranking before it. To ensure economy in the future, I think it would be well to make each competitor send in quantities, and an estimate for his design. If this is not done I feel sure that wasteful drawings will be the result.

H. H. HUMPHREYS,
Stud. Inst. C.E.

P.S.—I had better add, perhaps, that I was not a competitor, nor, as far as I know, were any of my friends or acquaintances.

SAFETY OF LADDERS.

SIR,—As a test question in regard to the safety of ladders, permit me through your columns to put the following:—

A ladder 60 ft. long and weighing 3 cwt., whose centre of gravity is one-third of the way from the foot, stands on a rough pavement and leans against a rough wall, its foot being 12 ft. from the wall. Will some one show by a graphical method of solution how near the top of the ladder a man weighing 1½ cwt. can ascend, the coefficient of friction for the pavement and the wall being $\tan -\frac{1}{10}$.

W. J. W.

CHRIST'S HOSPITAL.

SIR,—Fourteen years having elapsed (copying from a widely-circulated statement) since a Royal Commission reported that "for a thorough reform in the management and discipline of Christ's Hospital we think that its removal from London is indispensable," and the Privy Council scheme which became operative on January 1, 1891, providing (section 63) that the Hospital Schools for 1,170 scholars of both sexes "shall be maintained within a convenient distance from the City of London," I presume the public may expect soon to hear of something being done. Can anyone give any information?

BRICKS AND MORTAR.

The Student's Column.

WARMING BUILDINGS BY HOT WATER.

XIX.

BRICK-SET BOILERS (*continued*).

THE most customary way to set a saddle-boiler, especially of medium and large size, is to provide flues up and down along its exterior as follows:—The boiler is placed upon a level with the furnace-bars, the height of this point being fixed by the position of the door, &c., of the furnace fittings that are furnished for the job. The front of the boiler comes up tight against the brickwork front (against which the iron furnace front is fixed), and the joint between the boiler and brickwork must be a thoroughly sound and tight one to prevent the draught and flame making a short cut this way into the upper flue; see fig. 75.* This brickwork should be 9 in. thick.

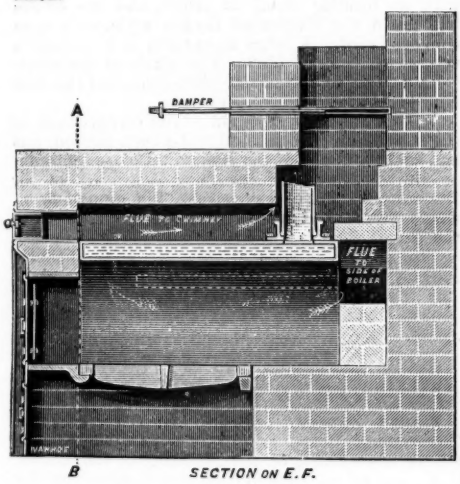


Fig. 75.

There is frequently a difficulty in getting the iron front and fittings to hold securely against the front brickwork, owing to several causes. Firstly, the expansion and contraction of the metal, and, again, the opening and shutting of doors, and use of stoking tools, are the chief causes of the work getting loose. This happens especially if the fittings are merely secured with holdfasts in the brickwork. The object in referring to this is to explain a method of securing the front which will not only keep the fittings in place under the roughest of usage, but which will tend to keep the front brickwork tight against the boiler also, as is so necessary, as just mentioned. This method is to have iron rods or stays extending from the iron furnace front right through along the sides of the boiler and clipping round its furthest end. These can be easily tightened up by having the front ends coming through holes, screwed, and with nuts on them.

From the illustration it will be seen that previous to the boiler being placed in position, its base is built up, and it is arranged that the brickwork extension of the fire-box at back (for the bars do not extend the whole length of boiler) is exactly level with the top surface of the fire-bars. The bars are also exactly level with the dead or dumb plate in front, the front ends of the bars coming just level with the front of the boiler as shown. Sometimes, when it is desired to place the boiler lower than usual, or to do with a shallower boiler-pit, the bars and back brickwork are kept level, as just explained, but some two to four inches below the lower edge of the furnace door, instead of being level with it. This inequality is made up by having the dumb-plate sloping, as fig. 76.

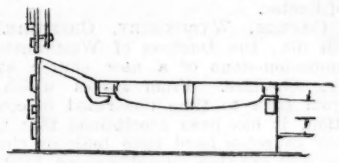


Fig. 76.

The common use of the dumb-plate now is to complete the furnace bottom from the bars to the front; it is a solid and strong plain plate, as bars are not needed here, and brickwork would do, only that clear way must be left beneath, the space below being the ashpit. The dumb-plate is sometimes used in the manner originally intended,—viz., to place a charge of coal upon, that it may dry and volatilise some of its lighter gases, which, passing over hot fuel, are consumed, the charge of fuel being afterwards pushed on, a considerable reduction in smoke and waste products being the result. It will be noticed in fig 75 that, from extreme front to back, the furnace bottom is quite level. This is how it should be in the usual way, and simplifies the stoking and reduces the chances of rough usage.

The furnace-bars usually occupy about two-thirds the area of the fire-box with a plain saddle-boiler, but the area varies with the pattern of the boiler, as has been fully explained (Art. XV.). The rear ends of the bars are sometimes made to rest on the brickwork with a light flat bar beneath, or they may be supported on a stronger bar, clear of the brickwork, as shown. In any case, their upper surfaces have to be quite level with the brickwork in question. The front extremities rest upon the rebated edge of the dumb-plate, or in some cases the dumb-plate has no rebated edge, and both this plate and the fire-bars rest upon a strong bar which extends from side to side. This latter method is not so good as the former, not so neat, and no stronger, for the dumb-plate being supported by the brickwork at each of its ends, will carry the fire-bars well. The fire-bars are kept forward, as shown, so that the inner and direct heating surface of the boiler may have the fullest benefit of the heat and heated gases, &c., before passing away at the back into the flues.

The rear end of the boiler does not reach to the back wall by some 5 in. to 8 in. (according to size of boiler); this space forms the passage-way for the heated products from the furnace to the flues of the boiler. There is, however, some brickwork built in this space with the object of guiding the heated gases in the directions they are intended to go. In this space between the boiler-end and the wall at the back is firstly built a fire-brick bridge, as shown in fig. 75, extending about halfway up the back of the boiler; and as marked in fig. 77, which

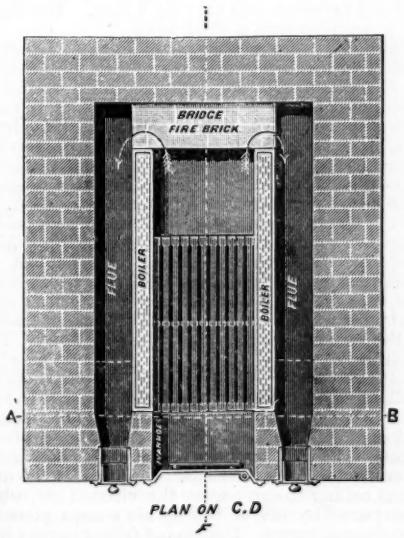


Fig. 77.

shows the fixing work in plan, say 6 in. above the level of the fire-bars. The object of this "bridge" is, firstly, to prevent the fuel working from the fire-box into the flues; and, secondly, to check the too free escape of the heated gases, &c. As mentioned, this bridge extends as nearly as possible half-way up, as shown at fig. 75, and also in the sectional elevation to be shown directly. With small boilers, a thick fire-brick slab is used for this purpose, but the space at back should be tolerably roomy; no harm will result as would happen if we made the other flues too wide. The action or direction of the flame at this point is to hug the boiler, to cling to it, we may say. This last illustration shows the two box soot-doors that have to be provided for cleaning the lower parts of the flues; another soot-door is provided over the top of the boiler in front.

At a point outside the boiler, a little above where it commences to describe a circle, two mid-feathers have to be provided, one on each side, as fig. 78; they are marked "brick." The

Fig. 78.

object of these feathers is to divide the flue-way round the boiler into three; they extend from the extreme back to within about 5 in. to 7 in. of the front of the boiler, as shown in dotted lines in the first illustration. From the last drawing just shown, it will also be seen that their position is a few inches above the brick bridge, or, in other words, there is a clear way for flame and heat to pass over the brick bridge and into the flues each side of the boiler underneath the feathers. This is shown by arrows on both figs. 75 and 77. After the flames have traversed the length of these flues to the front, they enter the top flue together, there being provision made for this by terminating the feathers some inches short of the front of the boiler, as shown in dotted lines at fig. 75.

They then pass along the top of the boiler from front to back, and into the chimney at the rear. It is supposed that with a low chimney and low draught the heated products have lost most of their heat after having made this journey.

To make the explanation as clear as possible, we have spoken of the flame and gases finding their way through these flues; of course, it is understood they are impelled or carried by the draught induced in the chimney.

This last drawing is in section and elevation across the front ends of the furnace-bars, and it will be noticed that the brickwork forming the bottom of the flues is also exactly level with the fire-bars and the rest of what may be called the base. The side flues are, as a rule, say, 4 in. for boilers up to 3 ft. 6 in. in length, and 4½ in. up to 5 ft., and 5 in. up to 7 ft. This is large enough, as we must always remember that flame, and heated gases and products, heat by contact only; that is, they must actually impinge against or touch an object, to heat it effectually.

It may be as well to explain the customary way of making the arched flue-way over the boiler, this method requiring no woodwork supports and suiting all sizes alike. After building up the brickwork at the sides to the point where the boiler begins to arch over, dry ashes are obtained and laid over the top to a thickness that agrees with the size of the flue required. The brickwork is then carried over, resting upon this bed of ashes, and when it is set the ashes are raked out.

The final point to be mentioned is the second bridge, which is carried over, extending from mid-feather to mid-feather each side, and above the other bridge at back. This bridge is seen in the first illustration. It is introduced to prevent the flame taking a short passage up at the back of the boiler into the chimney, which will probably exist just there. Some make this bridge by carrying an iron bar from side to side, about 5 in. or 6 in. above the lower

* This and figures 77, 78, 79, are from the catalogue of Jenkins & Son, Rotherham.

bridge, and building brickwork on this to the required shape and extent. This is not a good plan, for, unless the bar be a piece of small stout girder iron, it will contort or sag down, and cause very bad results. It is best to arrange to throw an arch over from feather to feather.

Fig. 79 shows the boiler finished complete,

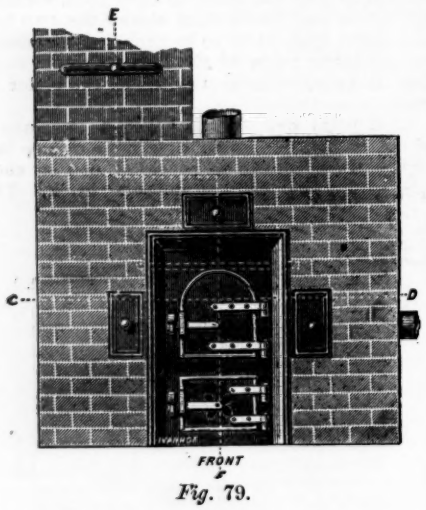


Fig. 79.

the boiler itself being out of sight, of course. Boilers can be had with waterway mid-feathers if desired; also the lower bridge at the back can be formed in the boiler with a waterway through it, and when the boiler is arranged to be fed through the top, by a proper feed-hole provided, it can also have a waterway front. The fixing of the saddle boiler has been dwelt upon rather fully, but it is necessary information, and goes far towards making a man competent to fix almost any other boiler.

OBITUARY.

MR. LUMB STOCKS, R.A.—We regret to hear that Mr. Lumb Stocks, R.A., died last week at his residence in Holloway, after a short but sharp attack of influenza. For many years he practised the art, now almost extinct, of line engraving, and his copies of Maclise's cartoons were published by the Art Union of London.

MR. F. J. ROBINSON, F.R.I.B.A.—We regret to hear of the death of Mr. Frederick Josias Robinson, of Derby. He was articled to the late H. J. Stevens, Fellow, and after passing some time in the office of Sir Gilbert Scott he entered into partnership with Mr. Stevens. He was fifty-eight years of age, and died from pneumonia supervening on a bad attack of influenza.

MR. GEORGE BIDLAKE.—On the 18th ult., Mr. George Bidlake, of Leicester, and formerly of Wolverhampton, died suddenly at Broadstairs, at the age of sixty-two. Mr. Bidlake was born in London, and educated at Merchant Taylors' School. He was afterwards articled to Mr. Kendall, a city architect, and was a student of the Royal Academy, where he won silver medals for his measured drawings of the Banquetting House, Whitehall, and for a design for a stamped drugget. Subsequently, he commenced practice at Wolverhampton, in which neighbourhood most of his works have been carried out. These comprise, amongst many other buildings, the Town Halls of Pontypool, Oswestry, Sutton Coldfield, and Bilston; workhouses at Dudley and Forden; Tettenhall College, Handsworth Grammar School, Lichfield Museum, Wellington Market, South Staffordshire Hospital Extension; Queen-street Chapel, Wolverhampton, and many other chapels and churches; additions to Albrighton Hall and numerous houses in the counties of Stafford, Worcester, and Salop. Mr. Bidlake retired from practice in 1872, removing at the same time to the neighbourhood of Leicester, where he resided until the time of his death.

GENERAL BUILDING NEWS.

VILLAGE-HALL AND CLUB, WARNHAM, SUSSEX.—A village-hall and club was presented to the village by Mr. H. Harben, of Warnham Lodge, on Monday, May 2. The land upon which the building is erected was given by Mr. C. T. Lucas, of Warnham Court. The building consists of a hall about 51 ft. long and 24 ft. wide, reading-room 25 ft. by 20 ft., smoking-room 25 ft. by 17 ft. 6 in., *artistes'* rooms and caretaker's apartments. The hall has a semi-circular iron roof, the walls being lined with glazed coloured bricks in patterns. For the exterior, a simple treatment of the half-timbered style common to many parts of Sussex has been adopted. The building has been erected from the designs of Messrs. Batterbury & Huxley, architects, London, by Messrs. J. Potter & Son, builders, of Horsham, at a cost of about 3,500*l.*

CHOIR STALLS, PLYMSTOCK CHURCH, NEAR PLYMOUTH.—Some new oak choir-stalls have been placed in this church, made by Messrs. Luscombe from the designs of Messrs. Tait & Harvey, architects, of Exeter.

NEW CHURCH, WYBUNBURY, CHESHIRE. — On the 25th ult., the Duchess of Westminster laid the foundation-stone of a new church at Wybunbury, Cheshire. From stones which have been from time to time unearthed in course of excavation, it has been ascertained that no less than four churches have been built on the same site, the first existing probably about 1130. The church now in course of progress is being built on a slab of Portland-cement concrete covering the entire area. The work is being done by Messrs. Treasure & Son, of Shrewsbury and London, from the designs of the architect, Mr. James Brooks, of London.

CHAPEL, ST. MARGARET'S HOUSE OF MERCY, ROATH, CARDIFF.—On Saturday last the Bishop of Llandaff opened the new chapel situate in the grounds of the St. Margaret's House of Mercy at Roath, Cardiff, which is worked by the St. Margaret's Sisterhood, East Grinstead. The chapel consists of a nave and sanctuary with a small vestry. Accommodation is provided for sixty adults. The building is Early English in style. The material is native stone, with box ground stone dressings and weatherings. Internally the walls are plastered. The tile floors are from Messrs. Smith & Co., Coalville. The windows are glazed with lead lights and cathedral glass by Mr. S. Evans, West Smethwick. The ironmongery and gas-fittings are by Messrs. Brown & Co., of Birmingham. The whole of the works have been carried out by Messrs. Shepton & Son, of Cardiff, from designs and under the superintendence of Messrs. Veall & Sant, architects, of the same town.

CONSERVATIVE CLUB, CHORLTON-CUM-HARDY, LANCASHIRE.—On the 23rd ult. the Chorlton-cum-Hardy Conservative Club was opened by Lady Egerton of Tatton and Mr. J. W. Maclure, M.P. The new building has been erected at the corner of Manchester and Wilbraham-roads, on a site covering an area of 2,000 square yards, from the designs and under the superintendence of Messrs. Darbyshire & Smith, architects, of Manchester. The principal entrance occupies a central position facing Wilbraham-road, and the various clubrooms are situated on the right and left of the entrance. The billiard-room, which is 40 ft. long and 26 ft. wide, contains two billiard tables, and is supplied with lavatory accommodation. The card-room and bar adjoin the billiard-room. At the other end of the buildings are the secretary's room, lavatories, and committee and reading-rooms; the two latter rooms being divided by a movable partition. The public hall, which is capable of holding about 800 persons, occupies the whole of the first floor, and is provided with both ladies' and gentlemen's retiring-rooms. The public and platform entrances are separate from the club entrance and from each other. A connexion is made between the club and hall for the use of members. A cooking-kitchen is also provided in the basement, with a hoist connecting the kitchen with the club and rooms above. A caretaker's house has been erected at the rear of the club. The exterior of the building is faced with Accrington red pressed bricks, relieved with Edwards's Ruabon buff terra-cotta. The roofs are covered with Buttermere green slates. The heating apparatus is on the low pressure hot-water system, and supplied by Messrs. Leech Bros. Mr. Owen Williams is the general contractor for the works. The cost of the buildings and furniture will be over 4,000*l.* The building is provided with a clock tower.

PAROCHIAL INSTITUTE, WOODHOUSE, LEEDS.—A working-men's institute, which has been erected by the Misses March, has just been opened at Woodhouse, near Leeds. The building is faced with pressed bricks, having Bradford stone dressings, the roofs being covered with Buttermere green slates. The two entrances from Cathcart-street give access on the ground floor to a reading-room and a recreation-room, each about 28 ft. by 20 ft. There is also a small lecture-room behind these two rooms, 31 ft. by 23 ft., fitted up with a platform. A large tea-making-room adjoins. A committee room, lavatories, and caretaker's house complete the accommodation on this floor. Near the two entrances are two stone staircases leading to the large lecture-hall on the first floor. This room is 70 ft. by 40 ft., and will accommodate about 600 people. The platform is constructed in sections, the permanent portion being large enough for ordinary occasions, while the enlargement makes it suitable for dramatic and other performances. The roof bindings are moulded, and spring from moulded stone corbels. Air trunks are fixed in the ceiling to carry away the vitiated air, which is extracted by one of Boyle's air pumps placed in an octagonal turret. The ground falling rapidly from front to back, the opportunity has been taken to construct a covered playground in the basement, which is lined with white glazed bricks, and lighted through an arcade of semi-circular arches. Messrs. Smith & Tweedale, of Leeds, were the architects, and Councillor Hannam has erected the building from their designs.

NEW CATTLE MART, GATESHEAD.—On the 25th ult. the new cattle mart for auction purposes was opened at Redheugh, Gateshead, by Messrs. T. and I. Maughan & Co. The mart is situated about fifty yards from the Gateshead entrance to the Redheugh Bridge, and is within a short distance of the Newcastle Cattle Docks. It covers an area of about 1,350 superficial yards, and it has been laid out and erected by Messrs. Geo. Scott & Son, contractors, of Newcastle, under the personal supervision of Mr. T. Nelson. The sale mart proper,—which is covered in, and lighted from the roof,—is about 36 ft. square, and the sale space is about 24 ft. square. The whole of the pens and stakes are cemented throughout, and the whole of the alleys and the sale space are paved with cement blocks.

CORPORATION PUBLIC BATHS, STAFFORD.—The formal opening of the new baths recently erected in the borough of Stafford took place on the 19th ult. The elevations of the bath to the river and to Greengate-street are in the half-timbered style, the material generally used being red brick. A clock tower, at present without a clock, is used as a shelter for the fire-escape. Within, there is a main swimming-bath, 83 ft. by 33 ft., and a ladies' swimming-bath (which at some future time may be used as a brine plunge bath), 60 ft. by 18 ft. The greatest depth of the large bath is 6 ft., and of the small 5 ft. 6 in. Each bath has a roomy gallery, and a suite of private baths opens on to the ladies' gallery. A suite of private baths for gentlemen is also attached, and there is a set of rooms and baths for the Turkish bath. There is provision for a number of private brine baths, which can be put in use as soon as the brine at the north end of the town becomes available. The cost of the whole is about 6,000*l.*, and the designs were by the Borough Surveyor, Mr. W. Blackshaw.

WESLEYAN CHAPEL, SHADWELL, LEEDS.—The foundation-stones of a new Wesleyan Chapel at Shadwell were laid on the 27th ult. The design of the new chapel is by Mr. Geo. F. Danby, architect, Leeds. The building is to be constructed of stone, with an interior lining of bricks, and the edifice will be in the Decorated Gothic style, with open timbered roof. A large class-room and minister's vestry will be provided. The whole of the woodwork will be of varnished pitch-pine, and the roof will be covered with Welsh slates.

BOARD SCHOOLS, BRECON.—The corner-stone of the new Board schools in Mount-street, Brecon, was laid by the Mayor of the Borough, Colonel Morgan, on the 15th ult. The accommodation will be for 198 infants, in three rooms on the ground-floor, where are also all the cloak-rooms and lavatories; the mixed schoolroom and two class-rooms for 119 boys and 119 girls being above. Mr. E. H. Lingen-Barker, of Hereford, is Architect to the Board; and the contractor of these schools is Mr. B. Jenkins, of Brecon, whose contract amounts to 2,586*l.*

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, BISHOP'S CASTLE.—A Local Government Board inquiry was held at Bishop's Castle, Shropshire, on the 28th ult., by Col. Luard, R.E., on an application of the Corporation for sanction to borrow 4,000*l.* for works of water supply. Water will be collected on the hills about six miles west of the town, and brought in by gravitation. The engineer for the works is Mr. W. Wyatt, of Shrewsbury.

SEWERAGE, ABERGWYNFY, SOUTH WALES.—The Sanitary Authority of the Rural Sanitary District of the Neath Union in the counties of Glamorgan and Brecon, having applied to the Local Government Board for sanction to borrow 7,500*l.* for works of sewerage and sewage purification, an inquiry was held on the 20th ult. at Abergwynfy by Major-General Henry Darley Crozier, R.E., when evidence was given in support and against the granting of the loan. The scheme was virtually approved of by the opposing side, the main contention being that the work should not be done by the Rural Sanitary Authority, but by the New (Local) Board when formed. The process recommended is the International Company's process by "Ferrozone" and "Polarite," and is the first instance of its being introduced into Wales. The sewage will be conveyed to the outfall works by gravitation. The precipitating tanks are constructed for either the "quiescent" or "continuous flow," and a patent arrangement is to be applied to the polarite filters for automatically cleaning the top layer of sand without having to remove the same off the beds for washing. The engineer for the scheme is Mr. W. E. Clason Thomas, of Neath.

BUILDING TRADE WAGES IN GENEVA.—According to a recent report of the United States Consul at Geneva on labour and wages in French Switzerland, carpenters, joiners, masons, &c., generally work by the hour, ten forming a day, for which they receive 4s. 2d. to 5s. When paid by the piece the rates are fixed so that they earn from 4s. to 5s. 7½d. a day. In these trades there are unions of employers and workpeople who fix prices and avoid difficulties and strikes, which, however, have broken out occasionally. Locksmiths and plasterers earn about the same wages, but in some cases more, viz., 5s. 7½d. to 6s. 3d. a day.

FOREIGN AND COLONIAL.

FRANCE.—In a cellar in the Rue de la Reine Blanche (Quartier des Gobelins) a large stone tomb has been discovered, containing bones, pieces of money of the time of Dagobert, and arms. The Service of Historical Monuments is taking steps to find out if an ancient Mirovingian cemetery did not exist in this neighbourhood, where for twenty years important archæological remains had been discovered.——The General Council of the Vosges has just voted the necesssary funds for the erection of a museum in the house of Joan of Arc at Domrémy. The Council have charged their President to petition the sculptor Antonin Mercié to hasten the completion of the statue of Joan of Arc at Domrémy.——A committee has been formed in the Department of Indre-and-Loire for the erection of a statue of Joan of Arc at Chinon. This Committee has just appealed to the sculptors for models one-fifth size, which will be the object of a competition open till July 15. The statue will be 2·40 m. high.——The town of Toulouse has just opened a Museum of Decorative Art in the beautiful edifice known as the Collège Saint Reymond. This museum contains the Greek, Gallo-Roman, and Renaissance treasures which were before crammed into the Museum of Painting. It is M. Romestin, Inspecting Architect of Historical Monuments, who has turned the edifice into its present use.——M. Diehl, Professor of the Faculty of Letters at Nancy, is charged with a mission to Tunis to study the ancient Roman inscriptions and the principal monuments of the Byzantine period.——The jury on the open competition for the construction at Biarritz of an Etablissment de Bains de Mer has just given its judgment for the first degree. Out of twenty-four designs sent in, four have been selected; these are by MM. Felix Calinaud, architect in Paris; Galinier & Curvale, architects at Toulouse; Métivier, architect of the Department of Gers; and Nodet, architect in Paris.——The Academy of Beaux-Arts has just chosen the subject for the Bordina Prize, to be awarded in 1894—"Continue the history of engraving on medals in France from the end of the fifteenth century to 1890." For the Troyon Competition, the prize of which will be awarded in 1893, the Academy has chosen as subject, "The border of a pond in a wooded valley, with animals; effect of sun and storm clouds."—— The celebrated panorama of the battle of Champigny, by the artists De Neuville and Detaille, which attracted such crowds a few years ago, is going to be parcelled out, and the fragments sold separately.—— The artist Weerts has just finished a great allegorical ceiling, ordered by the State for the decoration of the Hôtel de Monnaies in Paris, and which symbolises the triumph of the Universal Exhibition of 1889.

MISCELLANEOUS.

COMPLETION OF THE WIDENING OF LUDGATE-HILL.—According to Colonel Haywood's report for last year to the City Commissioners of Sewers, the widening of Ludgate-hill (southern side), which was begun twenty-seven years ago, will shortly be effected in its entirety. The claims, amounting to nearly 83,500*l.*, in respect of Nos. 5, 7, and 9, have been ultimately settled for 32,000*l.*, the Commissioners giving up the surplus land of Nos. 1 and 3, Ludgate-hill, together with Nos. 1 and 2, St. Paul's-churchyard. These premises will be taken down within a few weeks' time, and the frontage set back in alignment with the new houses recently built. A well-known firm of tea and coffee dealers have already removed to other premises in St. Paul's-churchyard, and Dollond, the optician's,—a business established in 1750, at No. 1, Ludgate-hill,—is re-opened in a shop lower down. The average width of the street was 43 ft. In 1866 they arranged with the London, Chatham, and Dover Railway Company for a widening of the lower part of the hill on the making of the bridge and viaduct. In course of the next five years the properties Nos. 51—71 (odd), as far eastwards as St. Martin's-court, had been acquired: in 1889 the block Nos. 37 to 47, and 5, St. Martin's-court, between the court and Pilgrim-street, was demolished, the block Nos. 11 to 35, between Pilgrim-street and Creed-lane, having been taken (in two portions) in the meanwhile. A conspicuous feature of the new buildings, by St. Martin's-court, is the City Bank, of which we published an illustration on 22 August last. The bank was planned and designed by Mr. T. E. Collcutt. From reports of the meetings of the Commissioners we gather that the sums expended upon the purchase of interests in the various properties will have amounted to about 375,000*l.* for, we think, 39 houses; a total that is subject to abatement, if the capitalised value of the ground-rents, estimated at 4,000*l.* a year, with other recoupments, be reckoned. Messrs. Joseph & Smithem were the architects of the two blocks of shops and offices at the corner of Creed-lane and by Pilgrim-street.

A NEW DREDGING PROCESS.—A further trial of the new dredger built by Messrs. Simons & Co., Renfrew, for the New South Wales Government, and which is to be used in Sydney Harbour, took place on April 12 in the presence of a number of people interested in harbour construction. The two suction pipes through which the sand, &c., is lifted, measure 20½ in. in diameter, and when the centrifugal pumps were in full operation drew up and deposited in the hoppers dredgings from the bed of the river at the rate of 1,000 tons an hour, or about double the quantity guaranteed in the contract.—*Iron and Coal Trades Review.*

DISSOLUTION OF PARTNERSHIP. — Mr. R. W. Hitchins asks us to say that he has dissolved partnership with the firm of Messrs. F. Jones & Co., Perren-street, Kentish Town.

SCAVENGING IN NEW YORK.—The *Engineering Record* (New York) for April 16 says:—"We are glad to note that the New York Street-cleaning Bill, which was prepared in accordance with the recommendations of the advisory committee of citizens, has become a law. Under its provisions, the streets will be cleaned by a permanent corps of trained labourers, applicants for appointment in which must pass an examination as to character and physical fitness."

ELECTRIC ORGANS.—The new Hope-Jones system of electric organ control is to be called into requisition at All Saints' Church, Bristol. Mr. W. G. Vowles is about to build an additional choir organ, and to entirely reconstruct the present instrument in accord with Mr. Hope-Jones's patents, in such a manner that the whole of the organ can be controlled from a movable key-desk which will be placed at the entrance to the chancel.—*Electricity.*

THE KENNEDY DRY PRESS BRICK MACHINE. — Some months ago (November 14, 1891, p. 372) we noticed what we believe was the first public exhibition in this country of an American invention known as the Kennedy Dry Press Brick Machine. The exhibition took place at Southall Brickworks, Middlesex, and a large variety of clays were tried, including the white clay of Cambridgeshire, and slate from North Wales, from all of which bricks of very good form were moulded and turned out at the rate of four per minute, computed to yield 26,000 per day. Since then, the prospectus of a Syndicate has been issued. Mr. Nichols, the proprietor of the Thames Pottery Brick and Tile Works, near Southend, at the mouth of the Thames, has erected a complete working plant in a permanent building some 60 ft. by 25 ft. on the ground plan, and two stories high. The steam is brought from a boiler previously in use at 100 yards distance away to a steam-engine of apparently about 12-horse-power, fixed within the new building. The crusher which pulverises the clay, the hopper-elevator which carries the powdered clay to the sieve on the upper story, and the brick-making machine, which is seated on the ground floor, are each driven direct by separate belting from the engine. On Tuesday last the directors assembled at the brickworks to receive a large party of practical brickmakers, and other visitors, who came to see the operations. Besides the local brick-earth, other clays were tried, including clay from Bridgewater forwarded by Messrs. Major & Co., and a remarkably adverse kind of fuller's earth sent by Mr. Lloyd Price of Bala. The latter pulverised into dust so fine that it filled the hopper-room, and came out by the windows like a fog. By slacking the speed of the crusher and the addition of a small percentage of moisture, bricks were, however, moulded from it. The chief feature in the results of the Kennedy machine is that drying before burning is eliminated. The bricks are smooth-faced all over, but an indentation or frog could be put on one or on both sides, if desired.

SMALL-POX HOSPITAL, BRADFORD. — Messrs. Morley & Woodhouse, the architects for this building, ask us to state that the scheme for the building (in regard, we presume, to heating and ventilation), illustrated in the *Builder* of April 16, is patented by them in conjunction with Mr. E. Oldroyd, the heating engineer, and they wish this to be known in order that no one may inadvertently make use of it. While we are happy to publish the statement, we feel, however, some doubt whether the patentees will find that they have power to protect the planning and arrangement of a building by patent. The law on the subject may still be doubtful, but precedents are against it.

A NEW STRAIGHTWAY VALVE.—Messrs. Beck & Co. send us an illustration and description of the Handy Straightway Valve, a double-disc valve operated by a detachable lever instead of the ordinary wheel: the position of the lever showing the degree of opening of the valve. It is designed for low pressures, as more compact than the ordinary globe valve, and for such a purpose seems likely to be useful and convenient.

WORKMEN'S DINNER.—On the 30th ult. Messrs. Marsh, Son, & Gibbs, of the Bath Stone Works, Box, entertained about 100 of the men and youths employed at their stone quarries at Rudloe and Corsham, at a repast at Rudloe The dinner was presided over by Mr. R. J. Marsh, the senior partner in the business, the vice-chair being filled by Mr. F. H. Gibbs. After the dinner, various toasts were proposed and songs contributed.

THE ENGLISH IRON TRADE.—Little change has occurred in the English iron market during the past week; the demand generally is of a hand-to-mouth character, although there is an improvement in the demand for crude iron in Cleveland. The returns for this district show a reduction of stocks amounting to 75,000 tons. The production exhibits a decrease of 101,951 tons on the month. There are only four furnaces in blast, all on hematite. Manufactured iron is in restricted inquiry, and the tinplate market remains very dull. In steel there is very little doing, and rails are easier. Both shipbuilders and engineers continue slack. The coal trade generally is not over active.—*Iron.*

CAPITAL AND LABOUR.

BIRMINGHAM.—The dispute at Birmingham between the master-builders and the bricklayers and their labourers still continues. The bricklayers demand an increase of pay from 8½d. an hour to 9d., and the labourers ask for 6½d. an hour instead of 5½d. The strike has now entered on its fifth week.

CARDIFF.—A serious dispute has arisen in Cardiff affecting about 3,000 carpenters, joiners, plasterers, bricklayers, masons, and plumbers. After protracted negotiations, a strike has been resolved on. The questions at issue are piece-work, sub-contracting, and importation of prepared stone and joinery. The masters have signified their willingness to grant an advance of ½d. per hour. The men demand 1d.

HARROGATE.—The *Leeds Mercury* says that the building trade at Harrogate is now practically at a standstill, the stonemasons being out on strike for an advance of wages. The masons only gave a week's notice before going out, and the master builders maintain that such a short notice is unjust, as they are fairly entitled to a month's notice before any alteration should be made in the rate of payment.

STAFFORD.—The bricklayers of Stafford came out on strike on Monday morning for a rise of wages from 7d. to 7½d. per hour. The *Birmingham Gazette* says that the officials of the Union met the heads of the different firms during the day, with the result that the advance was conceded by all except one contractor.

WORCESTER.—The bricklayers of Worcester still remain out for an advance from 7½d. to 8d. per hour. The house decorators and painters have accepted the ½d. advance which the masters offered when 1d. was claimed. Over 200 bricklayers' labourers came out on Monday for an advance from 4½d. to 5d., but they decided to accept the masters' offer of an immediate rise to 4¾d., and an advance to 5d. in May of next year.

MEETINGS.

SATURDAY, MAY 7.

Sanitary Inspectors' Association (Carpenters' Hall).—Mr. Frederick T. Poulson on "The Circulation of Rain Water." 6 p.m.

St. Paul's Ecclesiological Society.—Visit to St. Paul's Cathedral. 2.15 p.m.

Edinburgh Architectural Association. — Visit to Pitteadie Castle and Seafield Tower.

MONDAY, MAY 9.

Surveyors' Institution.—Professor G. E. S. Boulger on "The Scientific Study of Timber." 8 p.m.

Society of Arts (Cantor Lectures). — Dr. Percy F. Frankland on "Recent Bacteriological and Chemical Research in Connexion with the Fermentation Industries." II. 8 p.m.

Clerks of Works' Association (Carpenters' Hall).—Monthly meeting. 8 p.m.

TUESDAY, MAY 10

Institution of Civil Engineers.—Mr. A. P Trotter on "The Distribution and Measurement of Illumination." 8 p.m.

Royal Institution.—Mr. Frederick E. Ives on "Photography in the Colours of Nature." I. 3 p.m.

WEDNESDAY, MAY 11.

Society of Arts.—Mr. G. L. Addenbrooke on "Uses and Applications of Aluminium." 8 p.m.

Civil and Mechanical Engineers' Society.—Annual Dinner, Holborn Restaurant.

THURSDAY, MAY 12.

Institution of Civil Engineers.—Students' visit to the Beckton Gasworks, the Northern Outfall Sewer, the Victoria and Albert Docks, and the P. & O. ss. *Oceana.* (Leave Fenchurch-street at 9 18 a.m.)

Institution of Electrical Engineers.—(1) Continuation of discussion on Mr. A. P. Trotter's paper on "The "Light of the Electric Arc." (2) Dr. J. H. Gladstone and Mr. W. Hibbert on "The Cause of the Changes of Electro-motive Force in Secondary Batteries." 8 p.m.

Royal Institution. — Professor Dewar on "The Chemistry of Gases."—III. 3 p.m.

Society of Antiquaries.—8.30 p.m.

Edinburgh Architectural Association.—Annual Meeting: President's Valedictory Address. 8 p.m.

Dundee Institute of Architecture.—Mr. James Thomson on "Modern Sanitary Plumbing and its Defects." 8 p.m.

FRIDAY, MAY 13.

Architectural Association.—Nomination of Officers. Paper by Mr. C. R. Ashbee on "The Relation of the Architect to the Workman." 7.30 p.m.

Institution of Civil Engineers. — Students' visit to Woolwich Arsenal, the Works of the London Electric Supply Corporation, Deptford, and the Tower Bridge. (Leave Charing-cross at 9.40 a.m.)—Students' annual dinner at the Holborn Restaurant 7.30 p.m.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised.	Premium.	Designs to be delivered.
*Municipal Technical School	Manchester Corp.	.....	Aug. 2

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Residence, Hetton-le-Hole, Sunderland	Wesleyan Methodist Connexion	J. Shields	May 10
Road Construction, Woodhouse	Handsworth Loc. Bd.	W. H. Lancashire	do.
Flagging, Paving, &c.	Plymouth Corporation	G. D. Bellamy	do.
Three Cottages, Calcots, Elgin, N.B.	.....	A. & W. Reid	do.
*Kerbing and Channelling	Hackney Bd. of Works	J. Lovegrove	May 11
Sewerage Works	Ystradyfodwg Loc. Bd.	J. W. Jones	do.
Offices and Stables, Kirkdale, &c.	Lancs. & Yorks. Ry.	*Official*	do.
Granite Road Metal, Kerbing, &c.	East Stonehouse L. B.	do.	May 12
*Cleaning and Painting Works, S. E. F. H.	Met. Asylums Bd.	Jarvis & Sons	do.
Alterations and Additions to Library, Brightside	Sheffield Corporation	C. F. Wike	do
Additions, Westfield Mills, Yeadon, Yorks	Edwd. Denison	Geo. Foggitt	do.
Road Work and Drainage, Maindy, Pentre, Rhondda Valley	"General" Booth	Edwin Jones	do.
*Construction of Lavatories, &c. &c.	Brighton Town Council	F. J. C. May	May 13
*Removing Street Refuse by Barge	Vestry of St. Giles, Camberwell	*Official*	do.
	do.	do.	do.
*Removing Dust by Barge	Folkestone Corp.	J. White	May 14
*Road Materials	do.	do.	do.
*Wood Paving Blocks	R. J. Foster	T. H. & F. Healey	do.
*Masons' Works, Stocksfield Park, Wetherby	Howell Davies	A. O. Evans	do.
House, Llantrisant, Glam.	Forres Police Commrs.	Gordon & McBey	do.
Iron Lattice Girder Bridge, Forres, N.B.	Bermondsey Vestry	*Official*	May 16
*Stonework, Town Hall	St. Marylebone Bur. B.	do.	do.
*Painting Iron Railings	Vestry of St. Giles, Camberwell	do.	do.
*Paving Works	.....	J. W. Trounson	do.
Wesleyan Chapel and School Buildings, Newbridge, Cornwall	Rev. Harvey Field....	J. H. Brearley	do.
Wesleyan Chapel and Schools, Church Fenton, near Leeds	.....	T. A. Buttery	do.
Thirteen Houses and Two Shops, Town End, Morley	Southampton Corp. ..	J. G. W. Aldridge	do.
Electric Lighting, Western Shore			

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
*Sewerage and Drainage Works	St. Albans Corp.	*Official*	May 17
*Supply of Materials	London County Council	do.	do.
*Roadmaking Works	Lewisham Bd. of Wks	do.	do.
*Making-up Roads	Brentford Loc. Bd.	J. H. Strachan	do.
*Broken Granite	do.	do.	do.
*Supply of Road Materials	Maidstone U. S. A.	W. C. Scoones	do.
*Kerbing and Channelling	Cheshunt Local Board	F. Bennett	do.
Two Homesteads, Blairmore, N.B.	Alex. Geddes	Geo. Sutherland	do.
*Cleaning and Painting Works, East. F. H.	Met. Asylums Board..	K. D. Young	May 18
*Reconstruction of Stratford Viaduct, stroud	Gt. Western Ry.	*Official*	do.
New School, Eastleigh, Southampton	S. Stoneham Sch. Bd.	Mitchell, Son, & Gutteridge	do.
Chapel, Moserah, near Abergavenny	Wm. Williams	.....	May 19
*Painting and Decorating Town Hall	Leeds Corporation	*Official*	do.
*Sheds, Latrines, &c. Penzance	Admiralty	do.	May 20
*Painting Works, Caterham Asylum	Metro. Asy. Bd.	do.	do.
*Construction of Two Filters, &c.	Dorking Water Co.	J. Mansergh	May 21
*Semi-detached Villas, Barnet	.....	W. H. Mansbridge	May 28
*Enlargement of P. O. Southampton	Commrs. of H.M. Wks	*Official*	May 31
*Dock Gates	Barry Railway Co.	J. Wolfe Barry	June 11
*Married Soldiers' Quarters, Eastbourne	War Department	*Official*	No date
*Oak Telegraph Arms	G. P. O.	do.	do.
*Alterations, &c. to Buildings, Machinery, &c. at Baths	Chelsea P. B. & W. Com.	do.	do.
*Cast-iron Pipes	Bishop's Castle T. C.	W. Wyatt	do.
Water-works, Whittle Dene	Newcastle & Gateshead Water Co.	*Official*	do.
Additions and Alterations, Embleton Hall, Northumberland	Dr. Fenwick	Boolds & Hardy	do.
Two Houses, Burley, Leeds	.....	Chas. Finnerty	do.
Two Shops, Westbar, Sheffield	T. Blow	A. Appleby	do.
Eight Houses, Intake, Sheffield	J. H. Strong	.....	do.
Restoration of Church, Pendoylan, near Peterstone-super-Ely	.....	Bruton & Williams	do.
Three Houses, Commercial-road, Newport, Mon.	Henry Fry	Newland & Hunt	do.
Street Improvement Works	Mirfield Loc. Bd.	F. H. Hare	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Assistant Inspector of Nuisances	Plymouth T. C.	80*l.* rising to 110*l.*	May 19
*Head Master	Coalbrookdale School of Art	.....	No date

Those marked with an Asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv., vi., & viii. *Public Appointments, p.* xx., & xxi

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

7,547.—KILNS: *J. Morton.*—This invention relates to a new construction of kiln to be used for burning retorts, pipes, or fire-clay slabs, but it may also be used to burn bricks (or other fire-clay articles. The primary part of the invention has reference to the roof of the kiln, and consists of a new method of covering in the roof by means of a suitable number of sections or arches, each section being composed of two springer beams, each end of which is connected by bolts to angle-iron shaped plates, and from these the archways are built up and composed of fire-brick slabs, each having formed on its upper surface notches or slots for taking hold of the flange projecting from the inner side of the springer beams, such beams being tied together by a tie-rod, which is made with a loop by which to lift the arch. It will be seen that all the ironwork is outside the kiln, and free from the direct action of the fire, whilst the kiln can be easily uncovered by lifting the several sections or arches.

7,887.—COWLS: *J. C. Waterhouse.*—This specification relates to chimney cowls, the object of the improvements being to lubricate the upper portion of the revolving spindle which carries the vanes, and also to adjust the flint-bearing upon which the foot of the spindle rests. The inventor places within the upper spindle-bearing a series of carbon plugs, commonly called "metaline," which provides a smooth and noiseless bearing, and as the bearing which contains these oilless carbon plugs is situated near the top of the main spindle, it forms a strong support, and steadies the spindle. The flint-bearing is placed upon a set screw in the flint-box, so that it can be adjusted, and preferably a washer is placed between the flint and the foot of the spindle for the latter to rest upon.

8,324.—SASH FASTENERS: *W. Smith and J. Claydon.*—The great advantage claimed for this improved sash-fastener is that the window can be opened for a short distance, and still be fastened by it. Upon the upper rail of the bottom sash is screwed down a plate in which revolves freely a perpendicular pin in the thickness of the sash rail, a circular hole having been drilled to allow for such easy working, and a coiled spring being arranged around this pin. Upon the bottom rail of the upper sash is screwed a flat hinged metal flap, the free portion of which is bent down at its end at right angles to the remaining portion. Another part, homogeneous with the part screwed down, traverses the oblique face of the top rail, and is additionally screwed to the side of this rail by one screw. The hinged portion is pierced upon both its faces with a long slot and also with two holes respectively at right angles to these slots. The movable pin beforementioned is attached to the lower sash-rail, which terminates at the top with a flat head provided on each side with projections capable of fitting into the circular holes before referred to in the hinged plate. When it is required to fasten the windows, the hinged plate is brought down upon the lower sash-rail, and the revolving pin slightly raised and turned at right angles across the slot, when the projecting point will fall into the circular holes and be firmly held there by means of the coiled spring below.

1,961.—WATER AND GAS PIPE HOOKS: *W. H. Dransfield.*—This patent refers to a method of manufacturing water or gas pipe hooks by first rolling or forging a bar or strip of steel or other suitable material, tapering towards each edge, and having a rib or web projecting from one side along the centre, and next cutting off wedge-like transverse sections from the same and bending up the wide end into the form of a "bill" or hook. Another modification of the invention is also described.

2,997.—HEATING APPARATUS: *W. Matthews and Others.*—This invention relates to apparatus for heating buildings and structures by radiation from metallic pipes internally supplied with heated water, air, or steam. The inventors form the pipes with an elliptical, flattened, hour-glass-shaped, sinuous, or other suitable cross-section, which will give a larger radiating surface than a circular cross-section for similar sectional areas. In addition, they form longitudinal gills, flutings, or corrugations in or upon the pipes, in order to increase the radiating surfaces. Compact radiators may be formed in the usual manner from a tier range, or series of such pipes inter-connected by means of branch pipes, for the purpose of securing the circulation of the heated fluid therein.

NEW APPLICATIONS FOR LETTERS PATENT.

April 19.—7,436, 7,437, and 7,438. G. Gibson, Sash Locks.—7,386, A. Palethorpe, Combined Draught Preventors and Door-springs.—7,401, H. Leigh, Vapour-burners or Plumbers' Torches.—7,432, J. Bouhon, Cowl.

April 20.—7,486, J. Robertson, Construction of Roofs, Floors, and similar Structures.—7,492, H. Oppenhemier, Electric Bells.—7,502, W. Thompson, Plaster for Building purposes.

April 21.—7,522, G. Ballard, Edging Tile or Brick.—7,533, J. Duckett and others, Construction of Kilns or Ovens for Drying and Burning Bricks, &c.—7,554, H. Bridson, Siphon Cisterns.—7,558, B. Hellmann and others, Stoves.

April 22.—7,631, E. Waller and C. Sniffin, White-lead.

April 23.—7,660, F. Carter, Tiles.—7,685, R. Mushet, Ventilators and Chimney Cowls.—7,685, L. Bertholet, Securing Doors.—7,692, H. Replogle, Spirit-level.—7,715, J. Bülhmann and A. Moesle, Scaffolding-frame and Trestles, usable also for other purposes.—7,719, S. Théraizel & F. Grand Montagne, Artificial Marble.

PROVISIONAL SPECIFICATIONS ACCEPTED.

2,137, C. Crompton and G. Taylor, Window-catch.—2,547, H. Baxter, Windows.—3,403, W. Pates, Water-closets.—4,269, F. Fitton, Treads for Stairs, Steps, &c., with or without devices for advertising, lighting, or ventilation.—5,446, T. Burrow, Stoves.—5,682, J. White, Holders for Sliding Sashes.—5,710, D. Faulkner, Fire-proof and Sanitary Partitions or Divisions.—5,752, J. Stickling, Construction of Tombstones or Monuments.—5,946, W. Price, Screws for Joiners' and other use.—6,261, P. Schmahl, Mounting Window-sashes and means or apparatus for Opening, Closing, and Holding the same in place.—6,358, H. Ford, Window-sashes.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

7,229, G. Cooper, Self-acting Hook for Holding Doors or Gates.—9,107, G. Barnes, Connecting Union for Electric-light Fittings.—14,608, J. Hanson, Window-sashes and frames.—5,346, M. Martin, Rule and Plumb-level.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

APRIL 25.—By *D. J. Chattell*: 15, Stockman's-row, Chiselhurst, f.r. 25*l.*, 800*l.*—By *G. F. Flower*: 21, Albert-st., Pentonville, u.t. 55 yrs., g.r. 6*l.*, 270*l.*—By *Moss & Jameson*: 98, Stebbington-st., St. Pancras, u.t. 52 yrs., g.r. 7*l.*, 410*l.*—By *Elliott, Son, & Boyton*: 31, Montagu-sq., Hyde Pk., u.t. 12 yrs., no g.r., 1,700*l.*; 3 to 6, Church-ter., Lambeth, u.t., 30 yrs., g.r., 21*l.* 6s., r. 125*l.*, 1,040*l.*; 89 to 92, Cornwall-rd., u.t. 30 yrs., g.r. 18*l.* 14s., r. 172*l.* 18s., 1,000*l.*; 8, Mason-st., u.t. 30 yrs., no g.r., r. —*l.*, 315*l.*—By *E. E. Croucher & Co.*: F.g.r. of 28*l.*, with reversion in 74 yrs., Oscar Villas, Broadstairs, 660*l.*; f.g.r. of 15*l.*, with ditto in 173 yrs., Wrotham-rd., 310*l.*; f.g.r. of 27*l.* with ditto in 75 yrs., Ramsgate-rd., 600*l.*: 21, St. Paul's-rd., Camden-town, u.t. 51 yrs., g.r. 10*l.*, r. 38*l.*, 230*l.*

APRIL 26.—By *Jones & Son*: 11, 12, and 23, Dalgleish-pl., Limehouse, f., 565*l.*; warehouse and stabling, Gloucester-st., f., 100*l.*; 1, 2, and 3, Clarendon-pl., Camberwell, u.t. 34 yrs., g.r. 9*l.*, r. 96*l.* 14s., 470*l.*—By *Debenham, Tewson, & Co.*: 47 to 53 (odd), St. John-st., West Smithfield, f., area 2,400 ft., 3,650*l.*—By *Norton, Trist, & Gilbert*: 10, The Crescent, Surbiton, f. 1,600*l.*—By *F. Jolly & Co.*: F.g.r. of 28*l.*, Church-rd., &c., Tottenham, with reversion in 29 yrs; and 3 freehold houses in Moselle-pl., 1,860*l.*—2, Chestnut-rd., f., r. 20*l.*, 270*l.*; "Vernon Cottage," Summerhill-rd., f., r. 22*l.*, 300*l.*; 116, Charles-st., Stepney, u.t. 32 yrs., g.r. 3*l.* 3s., 250*l.*; 87, King Edward's-rd., Hackney, u.t. 47 yrs., g.r. 6*l.*, r. 38*l.*, 350*l.*—By *A. Chancellor*: "Sussex Villa," Bracknell, with stabling and ground, f., 1,000*l.*—By *Bean, Burnett, & Co.*: 4, Grove-pk.-gardens, Chiswick, f., 695*l.*; 301, Old-st., and 45, Coronet-st., City of London, 2,820*l.*; 97, Riversdale-rd., Highbury, u.t. 78 yrs., g.r. 8*l.* 8s., r. 34*l.*, 270*l.*; 31, Michael's-grove, Brompton, u.t. 35 yrs., g.r. 2*l.*, r. 95*l.*, 995*l.*

APRIL 27.—By *Inman, Sharp, Harrington, & Roberts*: "Portland Lodge," Atkins-rd., Clapham, u.t. 32 yrs., g.r 5*l.*, r. 50*l.*, 280*l.* By *Inman & Co.*: 15, Loudoun-rd., St. John's Wood, u.t. 45 yrs., g.r. 10*l.*, r. 63*l.*, 750*l.*; 3, Queen's-rd., u.t. 27 yrs., g.r. 5*l.*, r. 52*l.* 10s., 465*l.*—By *Wood & Kirby*: 31, Winchester-st., Pimlico, u.t. 38 yrs., g.r. 9*l.*, 450*l.*—By *Hobson, Richards, & Co.*: 28, Buckland-Cres., Hampstead, u.t. 59 yrs., g.r. 16*l.*, 1,200*l.*; 50 and 51, Doddington-grove, Battersea, u.t. 60 yrs., g.r. 8*l.*, r. 58*l.* 10s., 310*l.*; 14, 16, and 18, Spanby-rd., Bow, u.t. 61 yrs., g.r. 10*l.* 10s., r. 93*l.* 12s., 610*l.*; "The Myrtles," Jeptha-rd., Wandsworth, u.t. 90 yrs., g.r. 17*l.* 15s., r. 35*l.*, 340*l.*—By *H. J. Bliss & Sons*: 5, Stamford-grove East, Clapton, f., r. 26*l.*, 345*l.*; 54, Beulah-rd., Walthamstow, f., r. 27*l.* 10s., 315*l.*; 23, 24, and 25, Emma-street, Hackney, u.t. 42 yrs., g.r. 9*l.* 9s., 385*l.*—By *D. Young*: 2, St. Barnabas Villas, Lambeth, u.t. 50 yrs., g.r. 8*l.*, r. 44*l.*, 405*l.*—By *Toplis & Harding*: F.g.r. of 16*l.* 10s., Tennyson-rd., Kilburn, with reversion in 95 yrs., 405*l.*; f.g.r. of 22*l.* 8s., Kemble-road, with ditto in 84 yrs., 540*l.*; f.g.r. of 14*l.*, with ditto in 93 yrs., 340*l.*; No. 43a, Peckham Rye, f.; and f.g.r. of 10*l.* 10s., with ditto in 48 yrs., 400*l.*; l.g.r. of 70*l.*, Riding-house-st., Marylebone, u.t. 24 yrs., 620*l.*—By *E. & S. Smith*: No. 340, Gray's-inn-road, f., r. 63*l.* 12s., 950*l.*; 5, Upper Chadwell-st., Myddleton-sq., u.t. 20 yrs., g.r. 9*l.*, r. 48*l.*, 255*l.*; 29 and 31, Cloudesley-rd., Islington, and 10, Islington-pl., u.t. 25 yrs., g.r. 36*l.*, 165*l.*; 72, Margaret-st., Clerkenwell, u.t. 23 yrs., g.r. 7*l.* 10s., r. 27*l.*, 125*l.*; l.g.r. of 10*l.*, Upper Yardley-st., u.t. 23 yrs., 100*l.*; 2 and 3, Noble-st., u.t. 23 yrs., g.r. 22*l.*, 235*l.*—By *Jones, Lang, & Co.* (at Banbury): freehold land, 24a 3r. 2p., King's Sutton, Northants, 1,000*l.*; "Tomes Farm" and 55a. 2r. 10p., f. and c., 1,600*l.*; c. and f. land, 30a. 2r. 5p., 1,000*l.*; the dairy ground, 24a., f., 1,000*l.*; the residence called "Hollands" and cottages, 200*l.*; f. and c. cottages, r. 13*l.* 10s., 240*l.*; "The Bell Inn," public-house, f., r. 50*l.*, 1,110*l.*; f. plot of land, 1a. 1r. 31p., r. 12*l.* 15s., 120*l.*; c. and f. residence, with grounds, 350*l.*; f. farm-yard, nine cottages, f., and seven cottages, c., 345*l.*

APRIL 28.—By *G. B. Hilliard & Son*: "North Weald Lodge," near Ongar, and 64a. 2r. 7p., 1,125*l.*; A freehold

beer-house, in Wood-lane, 127*l.* 10s. — By *Messrs. Trollope*: F.g.r. of 48*l.*, Chepstow-place, Bayswater, with reversion in 66 yrs., 1,615*l.*; l.g.r. of 18*l.*, Priory-st., Camden-town, u.t. 32 yrs, no g.r., 260*l.*—By *C. C. & T. Moore*: 27, 29, and 31, Ricardo-st, Poplar, u.t. 67 yrs., g.r. 7*l.* 10s., 375*l.*; 24, Burghley-rd., Hornsey, u.t. 87 yrs., g.r. 6*l.* 6s., r. 24*l.*, 250*l.*: 54, Lessada-st., Bethnal-green, u.t. 40 yrs., g.r. 3*l.* 3s., 170*l.*; 29 and 31, St. Dunstan's-rd., Mile-end, u.t. 57 yrs., g.r. 7*l.* 9s., 290*l.*—By *Newbon & Co.*: 23, Hayling-rd., Stoke Newington, u.t. 80 yrs., g.r. 5*l.* 10s., r. 28*l.*, 230*l.*; 23 and 25, John Campbell-rd., Kingsland, u.t. 75 yrs., g.r. 12*l.*, 530*l.*; 24, Kersley-rd., Stoke Newington, u.t. 82 yrs., g.r. 6*l.* 6s., 235*l.*; "The Good Intent" beer-house and stabling, Wedmore-st., Holloway, u.t. 18 yrs., g.r. 33*l.*, 265*l.*; six houses in Nightingale-st., Marylebone, u.t. 29 yrs., no g.r., 550*l.*; 46, Malvern-rd., Hornsey, u.t. 85 yrs., g.r. 6*l.*, r. 30*l.*, 260*l.*—By *Stimson & Sons*: 148 and 150, Long-lane, Bermondsey, f., r. 100*l.*, 1,500*l.*; an improved rental of 20*l.* 10s., Brixton-rd., u.t. 7½ yrs., 73*l.* 10s.; 57 to 73 (odd), Chadwick-rd., Peckham, u.t. 65 yrs., g.r. 47*l.* 16s., 2,300*l.*; 1 to 8, Victoria-rd., f., r. 370*l.*, 4,800*l.*; 242 and 244, Beresford-st., Walworth, u.t. 58 yrs., g.r. 10*l.*, 690*l.*; No. 81, Drury-lane, f., r. 83*l.* 4s., 650*l.*; 3, Sidney-rd., Stockwell, u.t. 50 yrs., g.r. 6*l.*, r. 32*l.* 10s., 250*l.*; 201, St. George's-rd., Peckham, u.t. 70 yrs, g.r. 3*l.*, r. 26*l.*, 170*l.*—By *Baker & Sons*: F.g.r. of 28*l.*, Ilderton-rd., Bermondsey, with reversion in 85 yrs., 828*l.*; f.g.r. of 25*l.*, Ilderton-rd., with ditto in 85 yrs., 650*l.*; f.g.r. of 513*l.*, Ilderton-rd., with ditto in 85 yrs., 13,972*l.*; f.g.r. of 60*l.*, Cranswick-rd., with ditto in 85 yrs., 1,614*l.*; f.g.r. of 150*l.*, Bramcote-rd., with ditto in 85 yrs, 3,875*l.*; f.g.r. of 120*l.*, Delaford-rd., with ditto in 85 yrs., 3,037*l.*; f.g.r. of 80*l.*, Ablett-rd., with ditto in 85 yrs., 2,002*l.*—By *Chinnock, Galsworthy, & Co.*: Nos. 391 to 403 odd, City-rd., f. 10,160*l.*; 2 to 15, Duncan-ter., f., 12,360*l.*; a Plot of Freehold land, Torrens-st., area 3,196 ft., 880*l.*; a Plot of Freehold Land, Goswell-st, area 5,200 ft., 2,000*l.*; 302, Goswell-rd., f., r. 38*l.*, 900*l.*

APRIL 29.—By *Protheroe & Morris*: "Shanklyn Villa," Osborn-rd., Buckhurst Hill, u.t. 91 yrs., g.r. 4*l.* 10s., r. 26*l.*, 275*l.*—By *Phillips, Lea, & Davies*: 1 to 4, Pear Tree-pl., Clapton, f., r. 57*l.* 4s., 410*l.*—By *W. A. Blakemore*: F.g.r. of 6*l.*, Clifton-ter., Finsbury Park, with reversion in 76 yrs., 133*l.*; 1, Southerton-rd., Hammersmith, u.t. 74 yrs., g.r. 6*l.*, 300*l.*; No. 438, Fulham-rd., u.t. 44 yrs., g.r. 18*l.*, r. 50*l.*, 305*l.*—By *P. Hodson*: 2 to 14 (even), Pleasant-passage, Holloway, u.t. 42 yrs., g.r. 25*l.*, 525*l.*; 18, Eden-grove, u.t. 36 yrs., g.r. 22*l.*, 175*l.*; 55, Chichester-rd., Kilburn, u.t. 65 yrs., g.r. 5*l.*, 370*l.*; 10, Lyrne-st., Camden Town, u.t. 47 yrs., g.r. 7*l.*, r. 55*l.*, 460*l.*—By *Chinnock, Galsworthy & Co.*: 1 to 5, Colebrook-row, City-rd., f., 4,730*l.*; 373 to 379 (odd), and 383 and 387, City-rd., f., 7,100*l.*; 353, 355, 357, 359, to 363 (odd), City-rd., f., 7,040*l.*; 341 to 345 (odd), 349, 350, and 351, City-rd., f., 6,000*l.*; No. 366, Goswell-rd., f., area 2,650 ft., 1,090*l.*—By *Baker & Sons*: F.g.r. of 91*l.*, Bramcote-rd., Bermondsey, with reversion in 85 yrs., 2,383*l.*; f.g.r. of 14*l.*, Ablett-st., with ditto in 35 yrs., 395*l.*; f.g.r. of 162*l.*, Barkworth-rd., with ditto in 85 yrs., 3,979*l*; f.g.r. of 60*l*, Verney-rd., with ditto in 85 yrs., 1,461*l.*; f.g.r. of 59*l.*, Varcoe-rd., with ditto in 85 yrs., 1,468*l.*; f.g.r. of 45*l.*, Rotherhithe New-rd., with ditto in 85 yrs., 1,097*l.*; f.g.r. of 60*l.*, Cranswick-rd., with ditto in 85 yrs., 1,442*l.*; f.g.r. of 26*l.* 12s., Credon-rd., with ditto in 85 yrs., 651*l.*—By *R. Reid*: 46 and 47, Berwick-st., Oxford-st., f., r. 200*l.*, 3,600*l.*; No. 228, Uxbridge-rd., f., 860*l.*; 1, Bloomfield-ter., f., 910*l.*; 10, Girdlers-rd., West Kensington, u.t. 73 yrs., g.r. 4*l.*, r. 50*l.*, 650*l.*; 24 to 32, Cardross-st., Shepherd's Bush, f., r. 117*l.*, 970*l.*; f.g.r. of 20*l.*, Haslett-rd., Kensington, with reversion in 86 yrs., 495*l.*; f.g.r. of 30*l.*, Sinclair-rd., with ditto in 85 yrs., 800*l.*; f.g.r. of 19*l.* 10s., Daviaville-rd., Shepherd's Bush, with reversion in 84 yrs., 460*l.*; f.g.r. of 6*l.* 10s., with ditto in 86 yrs., 150*l.*; f.g.r. of 10*l.*, Purcell-st., Fulham, with ditto in 86 yrs., 200*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	9/0/0	6/0/8
Teak, E.I... load	10/0/0	15/0/0
Sequoia, U.S.ft.cu.	2/3	3/0
Ash, Canada load	2/10/0	4/0/0
Birch, do.	3/5/0	4/10/0
Elm, do.	3/10/0	4/15/0
Fir, Dantzic, &c.	1/10/0	3/10/0
Oak, do.	3/0/0	5/5/0
Canada.....	5/10/0	7/0/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/10/0	3/0/0
Lath, D'ntzic, fath	5/0/0	6/0/0
St. Petersburg	5/0/0	7/0/0
Deals, Finland, 2nd & 1st std 10ft	8/10/0	10/0/0
Do, 4th & 3rd..	7/0/0	8/10/0
Do. Riga	7/0/0	8/0/0
St. Petersburg, 1st yellow ..	11/0/0	15/0/0
Do. 2nd yellow	8/0/0	10/0/0
Do. white	7/10/0	11/0/0
Swedish	8/0/0	16/0/0
White Sea	8/0/0	1 8/0/0
Canada, Pine 1st	20/0/0	26/0/0
Do. do. 2nd....	14/10/0	16/0/0
Do. do. 3rd, &c.	8/0/0	10/5/0
Do. Spruce. 1st	8/10/0	11/0/0
Do. do. 3rd & 2nd.....	6/15/0	8/0/0
New Brunswick	7/0/0	7/10/0
Battens, all kinds	3/10/0	15/10/0
Flooring Boards, sq., 1 in. prep. 1st	0/8/0	0/14/0
Do. 2nd.....	0/7/0	0/11/0
Other qualities	0/4/0	0/9/0
Cedar, Cuba ..ft.	/3½	/4½
Honduras, &c.	/2½	/4
Mahogany, Cuba.	/4½	/6½
St. Domingo, cargo av	/4½	2/0
Mexican do. do	/4	/5
Tobasco do. do	/5½	/7
Honduras do..	/5½	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0/0	20/0/0
Bahia	9/0/0	18/0/0
Satin, St. Domingo ....ft.	0/0/8	0/1/3

TIMBER (*continued*).		
Satin, Porto Rico	0/0/8	0/1/6
Walnut, Italian..	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scotland .....ton	2/1/0	0/0/0
Bar, Welsh, in London.....	5/17/6	6/0/0
Do. do. at works in Wales	5/7/6	5/10/0
Do. Staffordshire, in London	6/5/0	6/15/0
COPPER—British, cake and ingot	48/0/0	49/0/0
Best selected ..	49/10/0	50/0/0
Sheets, strong..	59/0/0	0/0/0
Chili, bars	45/7/6	45/15/0
YELLOW METAL lb.	0/0/5	0/0/5⅝
LEAD — Pig, Spanish....ton	10/8/9	10/11/3
English, com. brands	10/12/6	10/15/0
Sheet, English, 3 lbs. per sq. ft. and upwards ..	12/0/0	0/0/0
Pipe	12/10/0	0/0/0
ZINC — English sheet .....ton	25/10/0	0/0/0
Vieille Montagne.....	26/5.0	0/0/0
TIN—Straits	94/7/6	94/17/6
Australian	94/7/6	94/17/6
English Ingots	96/0/0	96/10/0
OILS.		
Linseed .....ton	17/17/6	18/0/0
Cocoanut, Cochin	24/0/0	0/0/0
Do. Ceylon	21/17/6	22/0/0
Palm, Lagos	23/0/0	0/0/6
Rapeseed, English pale	24/0/0	24/5/0
Do. brown	22/15/0	0/0/0
Cottonseed ref...	19/0/0	0/0/0
Oleine	21/10/0	22/10/0
Lubricating, U.S.	4/0/0	5/0/0
Do. refined	5/0/0	10/0/0
TAR—Stockholm barrel	0/19/0	1/0/0
Archangel	0/12/6	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 12 *noon on Thursdays.*]

BEVERLEY.—For the erection of an infirmary for sixty patients adjoining the workhouse. Messrs. Hawe & Foley, architects, Beverley, Yorks. Quantities by the architects:—

J. Constable	£3,375 0	Geo. Downs	£3,034 2
G. & R. Pape	3,350 0	Richard Potts	2,994 12
G. Jackson & Son	3,100 0	Jno. R. Foley, Beverley (accepted)	2,987 0
H. Stephenson & Son ..	3,075 0		

BOXMOOR (Herts).—For erecting new stabling at "The Bell," for Messrs. Salter & Co., Lim. Mr. C. P. Ayres, architect, Watford:—

Timberlake	£265 10	Waterman	£247 0
Turner, Lim.	250 0	Dove & Co., Watford* ..	246 0

* Accepted.

BRANDON (Suffolk).—For the erection of a steward's house, at Brandon Park, Brandon, for the Baron de Barreto. Mr. Edward S. Mansergh, surveyor, 28, Mount-street, Grosvenor-square, W.:—

W. Saint	£815	Benjamin & Robinson	£724
Sanitation Company Ltd...	773		

BRISTOL.—For the erection of new premises, Baldwin-street, for Messrs. Bartlett & Co. Mr. Henry Williams, architect, 28, Clare-street. Quantities by Mr. A. Barratt, Somerset Chambers, Corn-street, Bristol:—

J. Wilkins	£1,670	G. H. Wilkins	£1,548
Cowlin & Son	1,643	R. Wilkins & Son	1,545
J. Bastow	1,627	W. Church	1,540
J. E. Davies	1,575	Eastabrook & Son*	1,496
C. A. Hayes	1,570	E. Love	1,473
Stephens, Bastow, & Co...	1,568	H. A. Forse	1,300

[All of Bristol.]
* Accepted.

CASTLE DONINGTON (Derby).—For providing and laying cast-iron mains for water supply at Castle Donington, for the Shardlow Union Guardians. Mr. Geo. Hodson, engineer, Abbey-buildings, Princes-street, Westminster, S.W. Quantities by Mr. F. W. Hodson:—

Jones & Fitzmaurice	£1,999 0 0	Hy. Vickers	£1,905 0 0
Chas. Green	1,979 10 0	Price & Shardlow, Nottingham* ..	1,780 0 0
G. F. Todd	1,919 6 2		

* Accepted.

GRAYS (Essex).—For the construction of sewers, tanks, cottages, buildings, &c., for the Grays-Thurrock Local Board. Mr. W. H. Radford, engineer, Nottingham:—

Price	£36,844	Neave	£33,444
Cook & Co.	34,500	Dickson	33,428
Bell	33,960	Rackham & Bentham	32,048
Lloyd	33,731	Band	28,500

Iron Pipes, &c.

Abbot & Co.	£3,356	Stanton Company	£3,038
Neave	3,229	Clay Cross Company	2,942
Butterley Company	3,092	J. & S. Roberts	2,927
Cochrane & Co.	3,065		

GREAT WRATTING (Suffolk).—For erecting new granary, &c., at Great Wratting Hall, for the trustees of the late Right Hon. W. H. Smith. Mr. C. P. Ayres, architect, Watford:—

Arber	£894 0	Mason, Haverhill*	£869 10
Jarvis	887 0		

* Accepted.

GUILDFORD.—For the construction of main sewers, tanks, buildings, &c., for the Corporation of Guildford. Mr. C. N. Lailey, Borough Engineer:—

Contract No. 1.—*Sewers.*

Stephens, Bastow, & Co..	£38,526!	Ossenton	£25,174
Peters	36,453	Neave	24,689
Green	36,000	Hayward	24,195
Finnegan	35,500	Cook & Co.	21,900
Band	29,440	Nicholls	20,186
Dickson	26,506	Cunliffe, Kingston*	18,547
Peattie & Axtell	24,215	Morgan & Co.	18,486
Hall	26,000	Rowles	14,800!
Bentley	25,756		

* Accepted.

Contract No. 2.—*Tanks, Engine-house, Cottages, &c.*

Hall	£14,000!	Peattie & Axtell	£10,845
Dickson	13,282	Nicholls	10,831
Neave	12,488	Peters	10,695
Bentley	12,395	Hayward	10,581
Ossenton	12,319	Cook & Co.	10,289
Finnegan	12,167	Band	9,850
Stephens, Bastow, & Co..	12,126	Cunliffe, Kingston*	8,785
Morgan & Co.	10,934	Rowles	6,915!

* Accepted.

HANLEY (Staffs.)—For making a road and draining park, for the Town Council. Mr. J. Lobley, Borough Engineer and Surveyor:—

Contract No. 1.—*Outer Circle-road.*

W. Vaughan	£5,480!	F. Barke	£3,640
H. Holloway	4,408	George Wild, Hanley* ..	2,831!
Jones & Fitzmaurice	3,786		

* Accepted.

Contract No. 2.—*Land Drainage.*

W. Vaughan	£2,195	John Gott	£1,396
Jones & Fitzmaurice	1,754	George Wild	1,389
W. Williams	1,450	F. Barke, Stoke-on-Trent*	999
H. Holloway	1,443		

* Accepted.

IRTHLINGBOROUGH.—Accepted for rebuilding the second portion of the church tower, Irthlingborough. Messrs. Talbot-Brown & Fisher, architects, Wellingborough:—

E. Brown & Son, Wellingborough £890 0 0

LEYTON.—For constructing three additional concrete sewage tanks (lined with blue brick), penstock chambers, &c., for the Leyton Local Board. Mr. William Dawson, engineer:—

Howard	£3,945	Neave	£3,648
Bell	3,787	Jackson, Leyton*	3,456

* Accepted.

LLANDILO.—Accepted for rebuilding Rutland House, Llandilo, for Mr. W. Williams. Mr. D. Jenkins, architect:—

Phillip Jones & Son, Swansea £315 0 0

LLANDILO.—For building six houses at Alan-road, L'andilo, for Mrs. W. Lewis, Canton. Mr. D. Jenkins, architect:—

Thomas Brothers	£1,554	Alfred Meredith, New-bridge-on-Wye*	£1,374
Price & Deakins	1,550	Benj. Davies	1,367

* Accepted.

LLANDYSSIL.—Accepted for water supply to Llynewydd Mansion, for Colonel Lewes. Mr. D. Jenkins, surveyor, L'andilo:—

John Jones, Red Lion, Orefach, Llandyssil..... £360 0 0

LLANGATHEN.—Accepted for the completion of Court Henry Church, for Miss Saunders. Mr. D. Jenkins, architect, Llandilo:—

Benj. Jenkins, Brecon £310 14 6

LONDON.—For alterations and additions to No. 24, London-road, Forest Hill, S.E. Mr. J. Randall Vining, architect, 89, Chancery-lane, W.C. Quantities supplied:—

Drew & Cadman	£897	Black & Son	£788
W. Johnson & Co.	875	H. C. Bowyer	739
C. Spreckley	840	R. G. Battley (accepted)	733

LONDON.—For alterations to milk-shed and stables, Christian-street, Commercial-road, for Mr. Harris. Mr. John Taverley, architect, 4, Leman-street, Whitechapel:—

Paulton	£364 0	C. Henry	£238 10
H. Gunn & Co.	325 0	H. Buck	237 0
M. J. Ingle	292 0	J. Lundy & Co.	250 0
Holly & Co.	285 0	Morgan & Son	237 17
Jefreys	275 0	J. F. Groome	223 15
H. Palmer	274 0		

LONDON.—For gasfitters' work at the "Lion," Junction-road, Upper Holloway:—

Conolly & Co.	£198 0	Biggs & Co.	£177 10
Hodges & Co.	184 0	Winn (accepted)	160 0

LONDON.—For erecting "model dwellings" in Radstock-street, Battersea, S.W., for Mr. E. Purchase. Messrs. Faville & Martin, architects, Dacre House, Arundel-street, Strand, W.C. Quantities supplied:—

Bates	£2,210	Young & Lonsdale	£1,793
Dearing & Son	2,150	Goodall	1,773
Toms	1,943	Gould & Brand	1,716

LONDON.—For alterations and pewtering at "The Eagle," Great College-street, Camden-town, for Mr. Sams, under the direction of Messrs. Thorpe & Furniss, architects, 154, High-street, Camden-town:—

Watts & Co.	£113 14 6	Edwards	£88 10 0
Helling	93 0 0	H. & F. Warne*	73 2 0

* Accepted.

LONDON.—For repairs to Nos. 7 and 8, Hatfield-place, Lambeth, S.E., for the Lambeth Estate Co. Ld. Mr. C. P. Ayres, architect, Watford:—

Holliday & Greenwood	£337	T. Turner, Ld., Watford* ..	£312

* Accepted.

LONDON.—For repairs to No. 23, Cornwall-road, Lambeth, S.E., for the Lambeth Estate Company, Limited. Mr. C. P. Ayres, architect, Watford:—

Holliday & Greenwood	£433	T. Turner, Ltd., Watford* ..	£427

* Accepted,

LONDON.—For the erection of first portion of residental flats to be called "Palace Mansions," Addison Bridge, Kensington. Mr. Fredk. Hemings, architect, 20, Bridge-row, E.C. Quantities by Mr. Alfred Boxall, 6, John-street, Adelphi:—

			A*
Pink, Fryer, & Co.	£29,870	.....	£125
Gregory & Co.	29,787	.....	350
Nightingale	29,680	.....	270
Killby & Gayford	29,230	.....	261
Stevens	29,150	.....	200
Smith & Co.	28,787	.....	393
Bush & Sons	28,139	.....	178
Perry & Co.	27,976	.....	100
Green†	27,357	.....	450

* Extra for fireproof floors.
† Accepted with slight alterations.

LONDON.—For pulling down and rebuilding the "White Hart" tavern, King's-road, Chelsea, for Mr. F. W. Chamberlain. Messrs. Dickinson & Paterson, architects, 5, John-street, Adelphi. Quantities by Mr. F. Thomson, 5, Great James-street, Bedford-row:—

Turtle & Appleton	£7,990	Burman & Son	£7,200
Ansell	7,733	Edwards & Medway	6,890
Harris & Wardrop	7,690	Bates	6,784
Marks	7,540	Dearing & Son, Canonbury (accepted)	6,300
Godden	7,280		

LONDON.—For alterations at the "Haberdashers' Arms," Battersea, S.W., for Mr. A. A. Solomon. Messrs. Fletcher & Migotti, architects:—

Littlefield	£550 0	Salt	£454 0
Walker Bros.	510 0	Courtney & Fairbairn* ..	437 0
Jackson & Jennings	476 10		

* Accepted.

Pewtering and Counter.

Edwards	£132 0	Williamson*	£72 10
Warne..	125 10		

* Accepted.

LONDON.—Accepted for alterations to the "Rose and Crown" tavern, Charing-cross-road. Messrs. Dickinson & Paterson, architects, 5, John-street, Adelphi, W.C.:—

W. Hearns & Co., Bayswater £1,332 10 0

Counter and Pewter Work.

Heath £187 0 0

LONDON.—For alterations to the "Waterloo" tavern, Haymarket, for Mr. F. A. Rhodes. Messrs. Dickinson & Paterson, architects, 5, John-street, Adelphi:—

Dearing & Son	£690	Edwards & Medway, Kennington, S.E. (accepted)	£485
Godden	645		

LONDON.—For re-building Nos. 28, 29, and 29a, Wimpole-street, Cavendish-square, for Mr. Samuel Lithgow. Mr. C. H. Worley, architect. Quantities by Mr. R. C. Gleed:—

G. H. & A. Bywaters	£17,530	E. Lawrance & Sons	£16,988
Simpson & Son	17,000		

LONDON —For alterations and additions to No. 26, Welbeck-street, Cavendish-square, for Mr. Lewis W. Thomas. Mr. C. H. Worley, architect. Quantities by Mr. R. C. Gleed:—

Simpson & Sons	£2,137	E. Lawrance & Sons	£1,925
G. H. & A. Bywaters	2,087	Scrivener & Co.	1,806
Wm. Downs	2,070	Keyes & Head	1,770

LONDON.—For alterations and additions to Nos. 88 and 90, Norfolk-terrace, Bayswater, for Mr. A. C. James. Mr. C. H. Worley, architect. Quantities by Mr. R. C. Gleed:—

E. Toms	£2,529	E. Lawrence & Sons	£2,390
Wm. Downs	2,525	H. & E. Lea	2,113
Scrivener & Co.	2,463	Keyes & Head*	1,870

* Reduced and accepted.

LONDON.—Accepted for rebuilding Nos. 67, 69, and 71, Oxford-street. Mr. Robert J. Worley, architect. Quantities by Mr. R. C. Gleed:—

Perry & Co. £4,070 0 0

LONDON.—For the erection of a Fire-Brigade station at East Dulwich, for the London County Council. Mr. Thomas Blashill, Architect:—

Holliday & Greenwood ..	£10,877	G. Munday & Son	£10,716
H. L. Holloway	10,864	Stimpson & Co.	10,260

[Referred to the Fire Brigade Committee.]

LONDON.—For repairs and alterations to the gas-meter testing station, Spitalfields, for the London County Council. Mr. Thomas Blashill, Architect:—

G. H. & A. Bywaters	£1,724	Higgs & Hill	£1,680
E. Lawrance & Sons	1,720	Co-operative Builders, Ltd.	1,640
Hall, Beddall, & Co.	1,700	Holloway Bros.	1,254

[Referred to the Public Control Committee.]

LONDON.—For the erection of a children's gymnasium and three bathing shelters at Victoria-park, for the London County Council. Mr. Thomas Blashill, Architect:—

A. Wallis	£767	H. Faulkner, jun.	£695
F. & F. J. Wood	739	J. Garrett & Son	620

[Referred to the Parks and Open Spaces Committee.]

LONDON.—For the erection of a children's gymnasium at Battersea-park, for the London County Council. Mr. Thomas Blashill, Architect:—

W. Akers & Co.	£511	H. Faulkner, jun.	£487
A. Wallis	492	J. Garrett & Son	463

[Referred to Parks and Open Spaces Committee.]

NORTHAMPTON.—For additions to a school at West Haddon, for the Heygate Schools Trustees. Messrs. Isgman & Shaw, George-row, Northampton :—

Hichman & Leatherland..	£125 0	Seal & Palmer, West Haddon (accepted)	£112 10
A. Maish	118 0		

NOTTINGHAM.—For proposed additions to Ilkeston-road Board Schools, for the Nottingham School Board. Mr. A. H. Goodall, architect, Market-street, Nottingham :—

T. Barlow	£2,475 0	J. Oscroft.....	£2,115 0
Gilbert & Gabbitas....	2,330 0	J. Cooper	2,114 0
A. B. Clarke	2,250 0	F. Wartnaby	2,113 0
Emerson & Franks	2,245 0	J. Shaw.....	2,111 0
J. Hutchinson	2,230 0	G. A. Pillatt	2,109 0
G. Bell & Son	2 226 0	B. Keeling	2,090 0
J. Attenborrow.....	2,156 0	Thos. Cuthbert, Nottingham*.....	2,039 0
J. F. Price	2,154 3		
F. Evans	2,140 0		

* Accepted.

PLYMOUTH.—For the erection of five dwelling-houses at Crownhill (Knackersknowle), for Mr. Sampson Revell, of Truro. Mr. J. H. Keats, architect, 34, Bedford-street, Plymouth. Quantities by the architect :—

Lapthoro & Goad	£2,979 0	F. C. Ambross	£2,186 0
R. Stanlake.....	2,552 0	J. Finch	2,180 0
J. Taylor	2,529 0	J. Colls.....	2,147 0
J. Julian	2,400 0	G. Shellabear.....	2,085 0
A. R. Lethbridge & Son	2,380 0	Reed, Blight, & Co.....	2,025 0
Watkins, Bryant, & Co.	2,338 0	W. R. Blake	1 850 0
T. May	2,198 0	A. N. Cole , Plymouth*	1,755 0
Tozer & Son.....	2,194 0	R. & Goad	1,644 7

* Accepted.

RICHMOND.—For proposed new shop at the corner of Kew and Church roads, Richmond. Mr. Frank E. Smee, architect, 12, West Smithfield, E.C. :—

W. Lamb.....	£273 0 0

[No competition.]

RICKMANSWORTH (Herts).—For alteration at Highfield, for Mr. Rd. Warwick. Mr. C. P. Ayres, architect, Watford :—

Waterman.....	£354	Brown & Sons.....	£294
T. Turner, Ld.	331	Dove & Co., Watford*.....	285

* Accepted.

RICKMANSWORTH (Herts).—For various repairs to the brewery house, for Messrs. Saiter & Co., Limited. Mr. C. P. Ayres, architect, Watford :—

Brown.....	£445	Dove & Co.	£405
Waterman	438	Turner, Limited, Watford *	389

*Accepted.

SOUTHAMPTON.—For the erection of offices, &c., in the Ogle-road, for Mr. P. Page. Mr. A. W. Galbraith, architect, 22, Portland-street, Southampton. Quantities by the architect :—

H. J. Sanders	£5,898	Reed, Blight, & Co.	£5,473
H. Stevens & Co.....	5,842	Morgan, Isted, & Morgan..	5,436
P. Crook & Sons	5,490	J. W. Roe & Co.*	5,335
J. Dyer & Son	5,485		

* Accepted.

SUTTON-IN-ASHFIELD.—For the proposed erection of twelve cottages, George-street, Sutton-in-Ashfield, for Messrs. Heath & Johnson. Mr. A. H. Goodall, architect, Market-street, Nottingham :—

B. Keeling.....	£2,550 0 0	J. Crorer	£2,289 0 0
J. Oscroft	2,510 17 6	Goodband & Franks.	2,244 17 0
G. Bell & Son	2 499 0 0	J. F. Price.....	2,200 0 0
G. A. Pillatt	2,400 0 0	W. Savage.....	2,100 0 0
J. Hutchinson.....	2,340 0 0	G. Coulton.....	2,085 0 0
Thos. Cuthbert ...	2,310 0 0	Chambers & Padgett, Sutton-in-Ashfield*	2,075 0 0
H. Vickers	2,300 0 0		

* Accepted.

TORQUAY.—For additions to vestry and transept, S. Mary Church, Torquay, Devon. Mr. Geo. H. Fellowes Prynne, architect 6, Queen Anne's gate, Westminster, London, S.W. Quantities by Mr. R. Henry Hale, 6, Duke-street, Strand, W.C.

Messrs. E. L. Luscombe..	£1,298 !	Fred. Mathews.....	£640
John Parker	770	Alfred Harris, S. Mary Church, near Torquay*....£591. 17s. 6d. !	
Edward Bovey	760		

* Accepted.

TUNBRIDGE WELLS.—Accepted for a residence at Gipps Cross, near Tunbridge Wells, Kent, for Mr. C. W. Powell. Mr. C. E Powell, architect. Quantities by Mr. R. C. Gleed :—

Wallis & Son, Maidstone	£1,633 0 0

WANSTEAD (Essex).—For the erection and completion of new residence and stables at Wanstead, for Mr. J. Richardson. Mr. Geo. Blowers, architect and surveyor, 46, Queen Victoria-street, E.C. :—

Holland	£1,479	W. T. Nichols	£1,017
Barker	1,435	Chas. L. Cole*.....	1,000
Grimes	1,075		

* Accepted.

WATFORD.—Accepted for temporary bridge, restoring walls, &c., in yard at Cannon Brewery, for Messrs. Benskin & Co. Mr. C. P. Ayres, architect, Watford :—

Dove & Co., Watford	£261 10 0

WELLINGBOROUGH.—Accepted for erecting house, Hatton Park, Wellingborough. Messrs. Talbot-Brown & Fisher, architects, Wellingborough :—

George Henson, Wellingborough	£1,336 14 9

WELLINGBOROUGH.—For erecting public swimming-baths, Wellingborough (exclusive of engineering works). Messrs. Talbot-Brown & Fisher, architects, Wellingborough :—

Green Bros., Palmerston-road, Northampton ..	£1,483 0 0

WELLINGBOROUGH.—For erecting twelve cottages, Stanley Estate, Wellingborough, for the Wellingborough Co-operative Society. Messrs. Talbot-Brown & Fisher, architects, Wellingborough :—

George Henson, Wellingborough	£2,352 0 0

WORKSOP.—For laying a sewer at Harthill, for the Union Rural Sanitary Authority. Mr. W. T. Brown, surveyor, Sherwood-road, Worksop :—

L. Dearden	£315 17 6	C. Buckle, Harthill*..	£255 0 0
C. Makin	300 0 0	J. M. Herring	194 10 0
Thos. Meakin	274 0 0		

* Accepted.

Rebuilding 189, *Upper-street*.—Mr. R. Maskall, builder, &c., 189, New North-road, writes calling our attention to an error in last week's list of tenders for this job. The name of the lowest tenderer should have been "Maskall," *not* "Marshall." The mistake was not ours.

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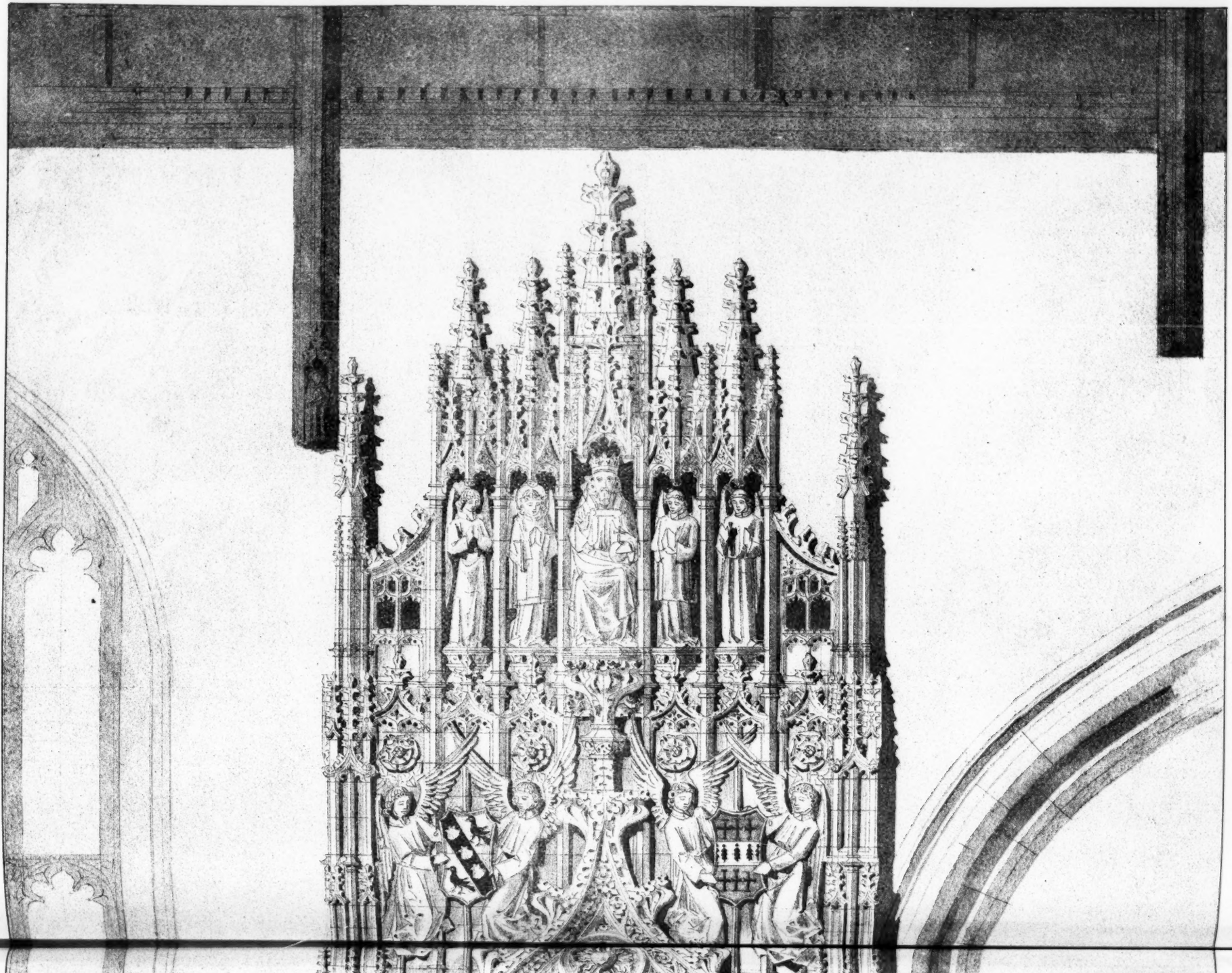

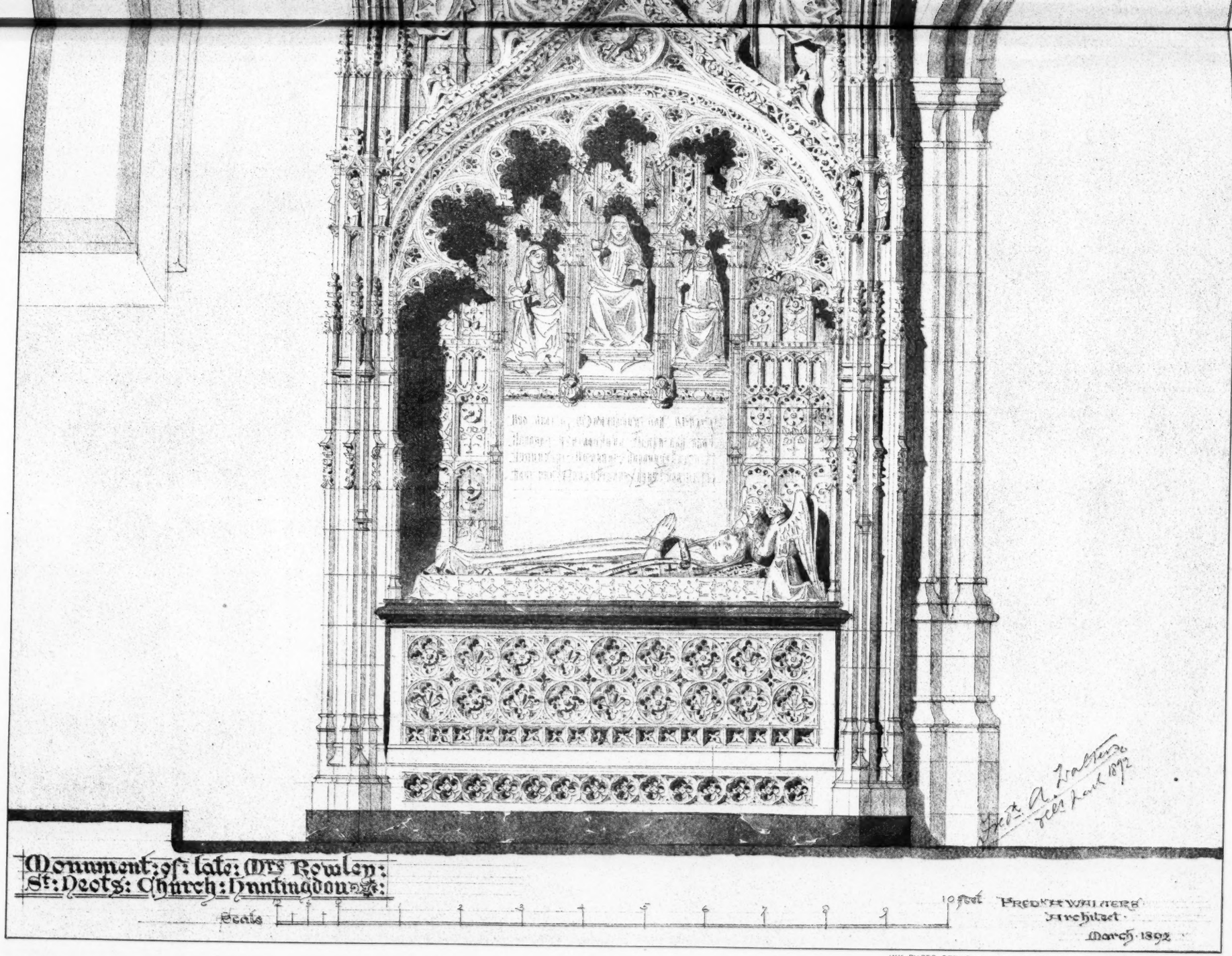

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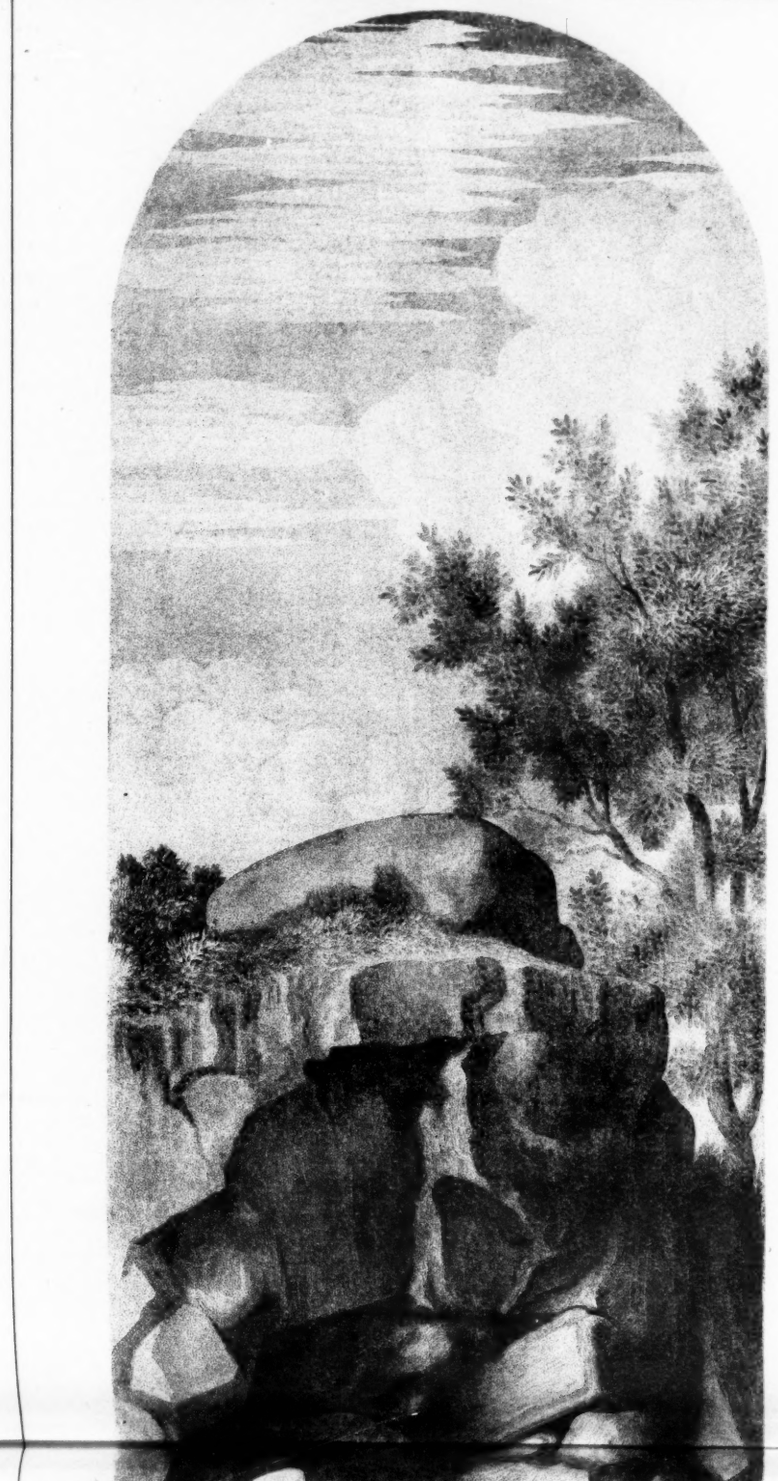
Royal Academy Exhibition, 1892.



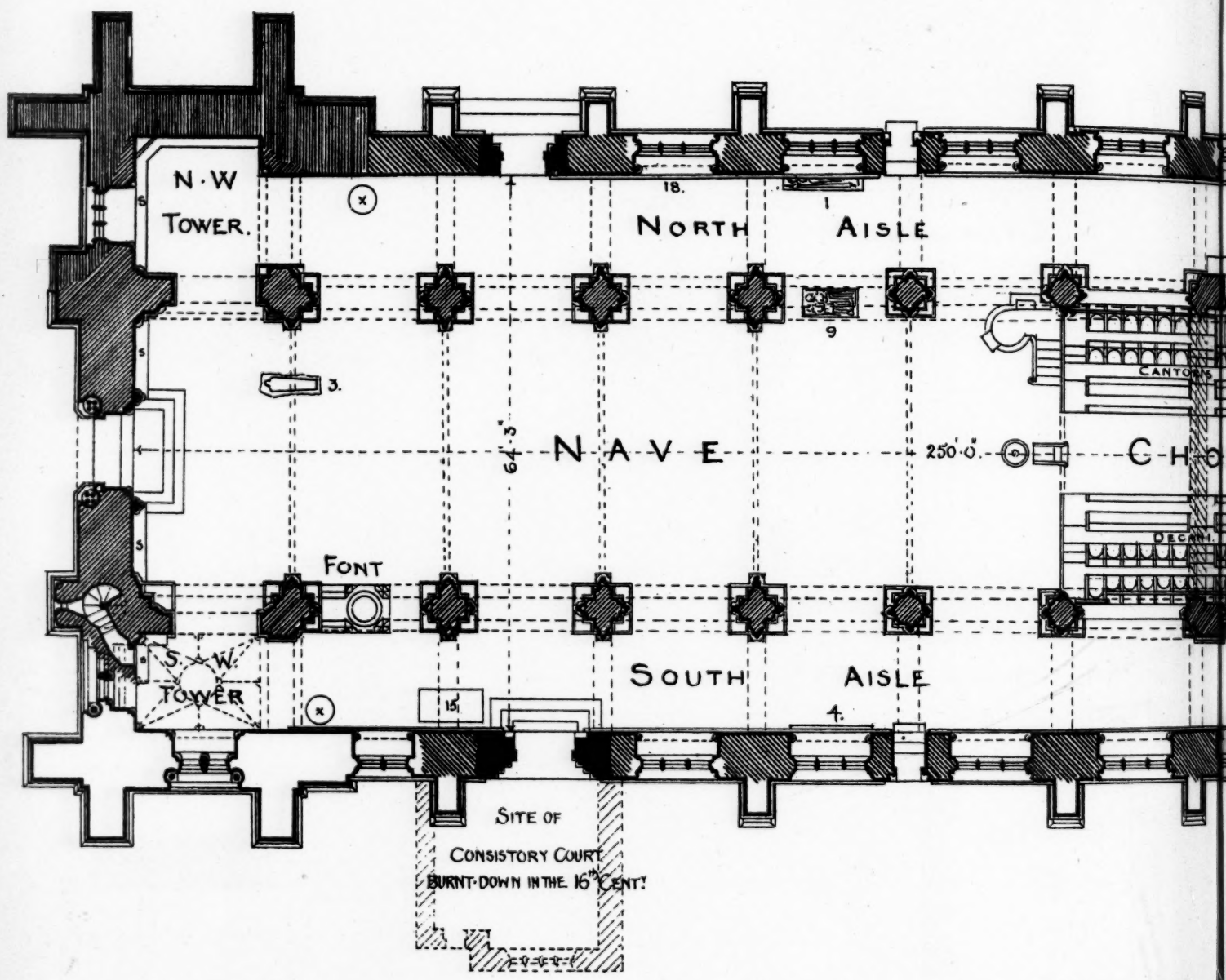
INK-PHOTO. SPRAGUE & Co. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

CARTOONS FOR A WINDOW.—DESIGNED FOR EUSTON CHURCH, SUFFOLK, BY MR. H. ELLIS WOOLDRIDGE.

THE CATHEDRAL CHURCH of

GROUND

Scale of 10 5 0 10 20 30 40



Monuments.

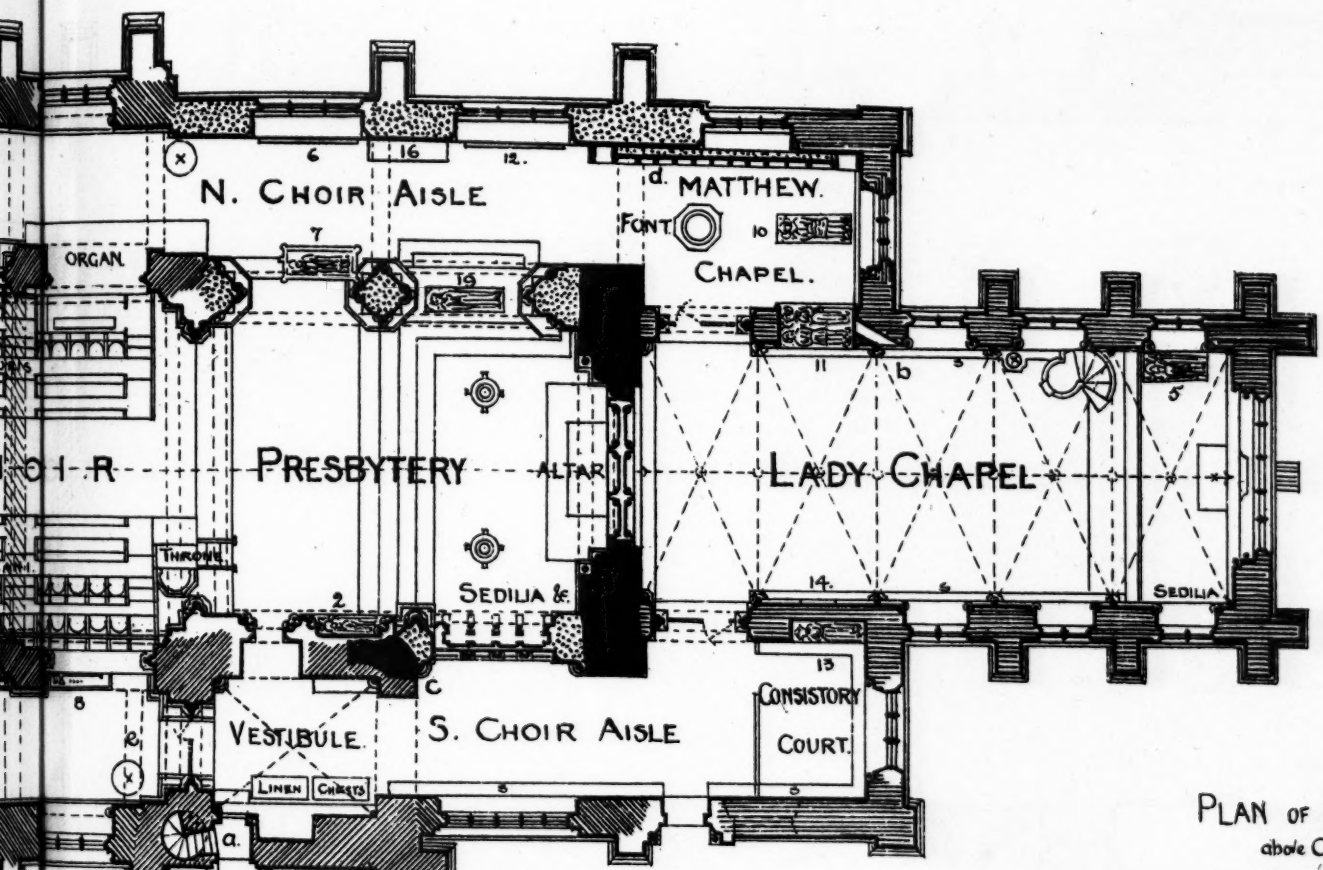
1. Said to be St. Dubritius 1st B: of Llandaff.
2. " " " Teleiau or Teilo . 1200.
3. 13th Century Coffin discovered.
4. Said to be Bishop Henry de Monmouth. 1323.
5. Bishop de Breuse 1287.
6. " Brumfield 1391.
7. " Marshall 1496.
8. A coffin Lid. Unknown.
9. Sir. Wm Matthew. and His Lady 1528.
10. " Dd " standard bearer. to Edward IV 1500.
11. Christopher Matthew & Lady 1500
12. An Emaciated Lady 14th Cent:
13. Lady Audley early 15th "
14. Bishop Coplestone 1827 on Wall.
15. Benn Hall Esq Hensol Castle 1817.
16. Rt. Hon. John Nicholl. D.C.L. 1853.
17. Dean Conybeare . 1857.
18. Hy. Thomas Esquire 1863 in recess.
19. Bishop Ollivant. 1882.
20. John Prichard Archt. of Restoration 1886.

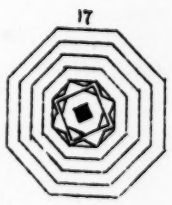
a Stair up to Library.
b Hagioscope or Squint.
C.C. Squint above. (Norman.
d 14th Cent: Reredos removed from Presbytery.
ee. Signs of destroyed Arches
s Stone Seats
x Stoves.
+ Stair up to leads.

H of S.S. PETER & PAUL LLANDAFF:

UND PLAN.

40 50 60 70 80 90 100 feet.





SUPPOSED WEST WALL OF "URBAN'S" NORMAN CH.

NORMAN.

EARLY ENGLISH

1st " DECORATED.

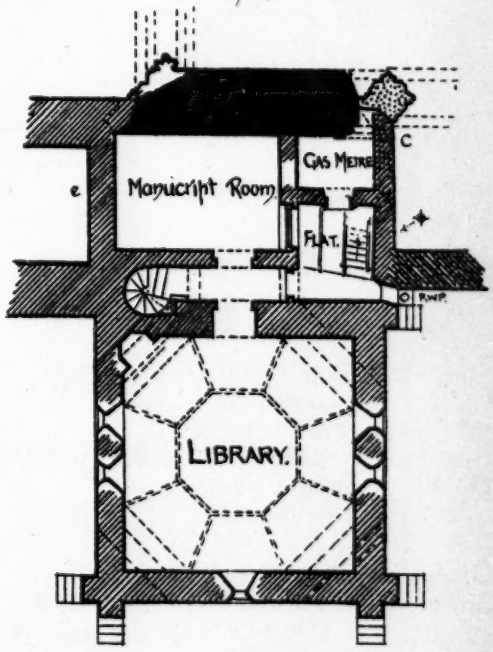
2nd " DO

3rd " DO

PERPENDICULAR

MODERN.

PLAN OF LIBRARY &c. above Chapter House.



John H. Jones.
Mems et delt.. 1892.

PHOTO-LITHO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

PHOTO-LITHO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

Cathedrals of England and Wales.

No. 17. LLANDAFF: WEST FRONT.—Drawn by Mr. C. E. Mallows.